



Gleysol, Carpathian Basin, Hungary, World Soil of the Year 2025

# IUSS



International Union of Soil Sciences®

## Bulletin

# 145

Issue 145 International Union of Soil Sciences (IUSS)

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# IUSS Reports

## Activities of the IUSS Presidents

*President Dr. Edoardo A. C. Costantini*

During the second half of the year 2024, the activities of the President have been focused on the further implementation of the objectives of the IUSS strategic plan 2021-2030.

In particular: 1) improving the organizational capacity and management of the IUSS, 2) strengthening the linkages with the Full Members and the Scientific organisms of the IUSS, 3) empowering the outreach and promotion of the IUSS and its members, 4) coordinating the follow-ups of the Centennial of the IUSS, as summarized in the following key points:

### **1) improving the organizational capacity and management of the IUSS:**

- a) Ongoing support for the new full-time secretary and the Secretariat, including assistance in organizing the meetings of the President's and Executive Committees, and of the Council;
- b) Collaboration on special events organized by the Secretariat, such as the participation of the IUSS at the G7 agriculture event in Siracusa, Italy, from September 26 to 28;
- c) Co-chairing the Organizing Committee of the Inter-Congress meeting October in Nanjing;
- d) Providing collaboration, support and input to all the Standing Committee;
- e) Replacement of the resigned Chair of the Standing Committee on Statutes and Structure;
- f) Establishing and participating in task forces:
  - i. to produce the guidelines for the nomination and celebration of the World Soil of the Year;
  - ii. to support the Committee on Statutes and Bye-Laws for proposed amendments;
  - iii. to help shape the new website of the IUSS.

### **2) Strengthening the linkages with the Full Members and the Scientific organisms of the IUSS:**

- a) Organizing the Council meetings at the Inter-Congress meeting 21st October in Nanjing, delivering reports on the IUSS activities, international collaborations and the outcomes of the Centennial celebration and Congress;
- b) Establishing contacts for the involvement of new members – Vietnam, Morocco, Sweden, and Kenya;

c) Participating in the Scientific Committee of the VII Eurosoil 2025 and maintaining contact with the Organizing Committee regarding the logistics for organizing the IUSS stand;

d) Representing the IUSS at congresses organized by Full members:

I. Representing the IUSS and delivering a keynote lecture, titled "The soil in hydraulic-forestry works" in person at the workshop "From the Floods Impact to Alluvial Soils Reclamation," Imola, Italy, on 4 July 2024;

II. Presenting a brief history of the IUSS at the IX Congress of the Dokuchaev Soil Science Society in Kazan, Russia, on 12-16 August 2024;

III. Introducing the IUSS and delivering a keynote lecture, titled "Different approaches in measuring and monitoring soil health", at the 2nd International Conference of Sains Tanah: Soil Science, Agriculture and Environment (ICO-SOTA). Solo, Central Java, Indonesia., 28-30 August 2024;

IV. Introducing the IUSS and delivering a keynote lecture, titled "Policies for the Protection of Natural and Cultural Ecosystem Services of the Soil", in person at the 11th Soil Congress in Cappadocia, Turkey, 23-25 September 2024;

V. Introducing the IUSS and delivering a keynote lecture, titled "Smart agriculture for soil conservation", at the of the 14th International Conference of Soil Science Society of Egypt, Cairo, 1st October 2024;

VI. Introducing the IUSS and delivering a keynote lecture, titled "Policies for the Protection of Natural and Cultural Ecosystem Services of the Soil", at the XXI Congress of the Soil Science Society of Colombia, Medellin, 1st October 2024;

VII. Introducing the IUSS and delivering a keynote lecture, titled "The IUSS offer of Soil Science Networking and International Collaboration" at the 4th International Web Conference on Natural Resource Conservation for Global Food Security and Environmental Stewardship to celebrate the "World Food Day", Academy of Natural Resource Conservation and Management (ANRCM), Lucknow, India, 15-16 October 2024;

VIII. Introducing the IUSS and delivering a keynote lecture, titled "Policies to Protect Soil Natural and Cultural Heritage" in person, at the International Forum of the Inter-Congress meeting of the IUSS, Nanjing, China, 20-24 October 2024;

IX. Introducing the IUSS and delivering a key-

note lecture, titled “The IUSS offer of Soil Science Networking and International Collaboration” at the Global Soil Conference 2024 “Caring Soils Beyond Food Security: Climate Change Mitigation and Ecosystem Services”, Delhi, India, 19 November 2024.

e) Participating in the events of the World Soil Day:

X. Delivering an invite lecture, titled “100 years of IUSS: history and perspectives, International World Soil Day, in person, at the World Soil Day Celebration in Budapest, Hungary, 5th December 2024 ([https://bioeast.eu/wp-content/uploads/2024/12/9\\_edoardoCostantini-Budapest2024.pdf?fbclid=IwY2xjawHPyQJleHRuA2FibQIx-MAABHcWW\\_oIH0ndw1vSrAf1KklhDw7Ao-2GlfG6xprcSOSH\\_NLG5sW9B03B4Low\\_aem\\_9liwekdVjDdKvBWqtViN5A](https://bioeast.eu/wp-content/uploads/2024/12/9_edoardoCostantini-Budapest2024.pdf?fbclid=IwY2xjawHPyQJleHRuA2FibQIx-MAABHcWW_oIH0ndw1vSrAf1KklhDw7Ao-2GlfG6xprcSOSH_NLG5sW9B03B4Low_aem_9liwekdVjDdKvBWqtViN5A));

XI. Introducing the IUSS and delivering a keynote lecture, titled “Different approaches in measuring and monitoring soil health”. World Soil Day, December 5th, 2024, Soil Science Society of Indonesia (HITI);

XII. Delivering a message titled “Global Changes and the Soil Resource” at the World Soil Day 2024, by the Italian Ministry of Culture – Rome, Italy.

### **3) Empowering the outreach and promotion of the IUSS and its members:**

a. UNESCO:

i. Contacts with UNESCO officers to develop a common strategy between UNESCO, IUSS, and FAO for the promotion of soil sustainability;

ii. Delivering a keynote lecture and participation in a round table in person at the UNESCO conference on “Soils at the hearth of integrated landscape management”, 1st July 2024, Agadir, Morocco;

iii. video meeting on international collaboration for Geoparks and Biosphere reserves, 11th July 2024;

iv. Contribution to the Concept note for the UNESCO global soil initiative;

v. Introducing the IUSS and delivering a short lecture titled “The IUSS offer of Soil Science Networking and International Collaboration for Soil Health”. At the UNESCO UNCCD COP 16 Presidency event: Presenting and mobilizing key stakeholders around Soil Health, 4th December 2024, Riyadh, Saudi Arabia;

b. Meeting of the Ministries of Agriculture of the G7 countries: Delivering the IUSS message

of auspices at the G7 conference on agriculture in Italy, 27th September 2024, Siracusa, Italy;

c. CA4SH: Representing the positions of the IUSS in the online meetings of the Coalition of Action for Soil Health. Providing a report on the Centennial for the CA4SH bulletin;

d. Representing IUSS as member of the Italian Knowledge Leaders, Convention Bureau Italia, in partnership with ENIT (National Tourism Agency) and with the CRUI (Conference of Rectors of Italian Universities), Rome, Italy, November 26th;

e. ISC: activities with the International Science Council and the Geounions.

i. Examination and meetings with the Geounions to reach a common position for voting on the new Statutes of the ISC;

ii. Review and approval of the ISC accounts;

iii. Representing the IUSS in online meetings and activities of the Disaster Risk; Reduction group of the Geounions;

iv. Appointment of IUSS experts for specific ISC and UN initiatives and documents related to soil salinity (Prof Jorge Battle-Sales, Spain), and soil erosion (Prof Fei Wang, China);

v. Meeting with the Unions to agree on a common position for the candidates to the next ISC positions;

vi. Campaigning among Unions to support the nomination of the IUSS member Prof Yongguan Zhu (China) as Vice-President of the ISC for Membership;

vii. Endorsement for an UN World Day of Karst, as promoted by the International Union of Speleology, and inclusion of the role of soil in the declaration;

viii. Chairing the 1st Roundtable of ISC unions and associations 3rd June 2024;

ix. Chairing the 2nd Roundtable of ISC unions on fundraising 17th September 2024;

x. Chairing the 3rd Roundtable of ISC unions for the organization of the General Assembly of the ISC 12 November 2024;

### **4) Coordinating the follow-ups of the Centennial of the IUSS.**

a. Publishing a report of the Centennial through various media;

b. Organizing the online publication of the presentations of the authors who have given permission;

c. Co-editing the books of proceedings of the scientific contributions and excursions.



Delivering a brief history of the IUSS at the IX Congress of the Dokuchaev Soil Science Society in Kazan, Russia, 12 August 2024



Introducing the IUSS at the Inter-Congress meeting of the IUSS, Nanjing, China, 20 October 2024



Keynote lecture at the 11th Soil Congress in Cappadocia, Turkey, 23 September 2024



With the President of the Soil Science Society of Turkey



Representing IUSS at the Italian Knowledge Leaders, Rome, Italy, November 26th



Keynote at the Global Soil Conference, Delhi, India, 19 November 2024



Invited lecture at the World Soil Day Celebration in Budapest, Hungary, 5th December 2024



Keynote at the XXI Congress of the Soil Science Society of Colombia, 1st October 2024



Keynote at the "World Food Day", Academy of Natural Resource Conservation and Management, Lucknow, India, 15 October 2024

### Report of the ISC event held in Muscat

The IUSS has participated into the General Assembly (GA) of the International Science Union (ISC) and the Global Knowledge Dialogue (GKD) held in Oman 25-31 January 2024. The programme of the GKD can be found <https://council.science/programme-muscat-gkd/> while the one of the GA is <https://council.science/documents-isc-ga-2025/>

The ISC is an international, non-governmental organization which brings together 250 international scientific unions and associations, national and regional scientific organizations including academies and research councils, international federations and societies, and young academies and associations. (<https://council.science/about-us/>).

The ISC was established in 2018 following the merging of the International Council for Science (ICSU), founded in 1931, and the International So-

cial Science Council. The IUSS was initially a member of ICSU and later became a member of the ISC upon its formation.

The ISC is structured into four membership categories:

1. International scientific organizations representing specific scientific disciplines, drawing membership from multiple countries within a region;
2. Academies of sciences, research councils, or similar non-profit scientific bodies;
3. National, regional, or global organizations primarily composed of active scientists, including young scientist organizations aligned with Categories 1 or 2;
4. Other bodies engaged in scientific fields related to the Council which may be granted observer status.

The IUSS is classified as Category 1 (Unions) and is part of the GeoUnions cluster, which consists of unions focused on earth and space sciences (<https://icsu-geounions.org/>).

IUSS Contributions and Participation

In addition to attending meetings and voting sessions, the IUSS provided access to relevant materials and documents for various sessions:

- January 26
  - o Freedom and Responsibility in Science: (<https://www.iuss.org/strategic-plan/>)
  - o ISC GeoUnions Meeting: (<https://www.iuss.org/world-soil-of-the-year/>) and (<https://www.23wcss.org.cn/>)
- January 27
  - o Parallel Session on Ocean Science for Sustainability: "How can Soil Sciences contribute to and shape our thinking around Ocean Science?"
- January 28
  - o Parallel Session - Science Education for Our Future: Building Capacities for Global Challenges: (<https://www.iuss.org/soil-publications/iuss-publications/soil-is-a-source-of-life-water-and-food/>)
  - o Parallel Session: The Decade of Science for Sustainability and the Post-2030 Agenda: "The Contribution of the IUSS to the SDGs"  
ISC GeoUnions Meeting

The IUSS co-chaired the ISC GeoUnions meeting on January 26, providing minutes for the ses-

sion. The agenda covered:

- Free circulation of scientists and visa challenges;
- Activities of the Unions;
- The International Decade of Sciences for Sustainable Development;
- The future of ISC and its relationship with international scientific Unions;
- Sharing structural and administrative insights among Unions;

Key conclusions and action points which came from the meeting:

1. A designated reference person for the Unions should be appointed within the ISC Secretariat;
2. A formal document should be signed by all Unions to support visa applications;
3. The online forum for Unions should carry on, with a structured yearly calendar and a potential series of webinars;
4. A motion should be proposed to allow more than one candidate for ISC President, ensuring transparency in the election process;
5. Future online meetings should focus on Union activities related to the International Decade of Sciences for Sustainable Development and the post-2030 agenda.

### ***ISC General Assembly (January 29–30)***

The outcomes and documents from the General Assembly will be published on the ISC website, including the Muscat Declaration on Global Science (<https://council.science/news/muscat-declaration/>).

### **Strategic Priorities and Discussions**

The draft strategic plan introduced the following priority areas:

- Freedom, Responsibility, and Inclusivity in Science;
- International Science Agenda Setting;
- The Evolution of Science and Science Systems;
- Evidence-Based Policymaking;
- Science Diplomacy.

During discussions, members highlighted key issues concerning freedom and responsibility in science, such as:

- The free circulation of scientists;
- Challenges with visa processes;
- Strengthening representation of diverse scientific communities;

To this regards, three resolutions have been approved:

1. Proposed resolution about war ethics ([https://council.science/wp-content/uploads/2025/01/Proposed-ISC-Resolution\\_War-ethics.pdf](https://council.science/wp-content/uploads/2025/01/Proposed-ISC-Resolution_War-ethics.pdf)).
2. Proposed resolution about the free circulation of scientists ([https://council.science/wp-content/uploads/2025/01/Proposed-ISC-Resolution\\_Free-movement.pdf](https://council.science/wp-content/uploads/2025/01/Proposed-ISC-Resolution_Free-movement.pdf)).
3. Proposed resolution on early- and mid-career researchers ([https://council.science/wp-content/uploads/2025/01/Proposed-ISC-Resolution\\_EMCR.pdf](https://council.science/wp-content/uploads/2025/01/Proposed-ISC-Resolution_EMCR.pdf)).

Dedicated membership forums for each ISC member category, including Early and Mid-Career Researchers (EMCRs), ISC Fellows, and thematic groups, provided spaces for discussion and feedback on strategic priorities. Additionally, regional meetings for Latin America and the Caribbean, Africa, and Asia-Pacific facilitated collaborative planning and reinforced ISC's commitment to addressing regional scientific priorities. ISC members shared insights from these discussions, contributing to the refinement of the draft strategic plan and proposed modifications to the ISC's statutes. These modifications pertain to ISC core values, governance structure, financial dues, and committee functions.

Finally, the ISC conducted a series of video interview with some officers of the ISC members, and the Past President of the IUSS has reported on the relationship between the IUSS and ISC. This interview will be made available on the ISC YouTube channel.

Link to the Muscat Dialogue and Declaration: <https://council.science/news/muscat-declaration/>  
Recordings: <https://youtube.com/@InternationalScienceCouncil/streams>

Event photos: <https://flickr.com/photos/council-science/albums/>

*Edoardo A.C. Costantini,  
Past President  
Irene Fabbri, Secretary*



Ph. Irene Fabbri

## **IUSS contributions given to the General Assembly of the International Science Council, Muscat, January 2025**

### *How can Soil Sciences contribute to and shape our thinking around Ocean Science?*

*By Edoardo A.C. Costantini*

Soils play an important role in mediating chemical weathering reactions and carbon transfer from the land to the ocean, thus regulating ocean acidification. Soil weathering slightly elevates the pH of drain-age waters, and the receiving coastal waters, thus increasing ocean's buffering capacity.

Moreover, the soils of the shorelines and shallow waters work as "filtration unit" that accumulate, emit and transform anything that comes into them. Thus, the soils of margin ecosystems, on the border between three major Earth spheres - atmosphere, lithosphere and hydrosphere, are extremely specific and often endangered. Serving as the natural geochemical barrier, these soils are affected by any (local or global) impact or environmental change. The huge length of the continental coastline, the diversity of coastal geomorphic features, landscapes, sediments, the character of tidal and surge phenomena, and the salinity of the sea determine the formation of a wide range of soils. A significant part of the coast belongs to the accumulative ones with gentle slopes.

This leads to the penetration of surge water onto the land for tens of kilometers; seawater feeds numerous small lakes, flooded swampy meadows, which also affects soil formation in this zone. Thalassosols (or Tidalic soils) comprise weakly developed soils of tidal flats and marshes with varying degrees of salinity and under different plant associations, as well as maritime soils that are affected by the aerial supply of salts with seawater drops and organomineral material from bare coastal areas.

The ocean influences the formation of the soil cover on its margins. On the other hand - "ocean-affected" soils form the hydrochemistry and bioproductivity of the coastal shallow waters.

In conclusion, the interplay between soils and water in coastal areas significantly affects water composition and acidity of the oceans. More studies are

needed to quantify the processes and define the management policies of these soils.

The IUSS bodies where the underplay between soils of coastal areas and oceans are more frequently studied are the following:

- Division 1 "Soils in Space and Time", commissions, (C1.1) "Soil Morphology and Micromorphology" (C1.2) "Soil Geography" (C1.3) "Soil Genesis" (C1.4) "Soil Classification" and, in particular, Commission 1.7 (C1.7) "Permafrost Affected Soils"
- Division 2 "Soil Properties and Processes" Working group "Critical Zone System".

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Renforth, P., & Campbell, J. S. (2021). The role of soils in the regulation of ocean acidification. *Philosophical Transactions of the Royal Society B*, 376(1834), 20200174.

### *How can Soil Sciences contribute to and shape our thinking around the role of science in future sustainability agendas?*

*By Edoardo A.C. Costantini*

In September 2015, 193 Nations politically agreed on the definition of 17 Sustainable Development Goals (SDGs) for improving the life of humans and the protection of the environment at a global scale, thus replacing the "Millennium Development Goals" (UN 2016). These 17 goals include 169 targets, covering a broad range of specific demands for sustainable development reaching from the end of hunger, improvement of human education and health, making cities more sustainable, combating climate change, protecting terrestrial and aquatic ecosystems, to many others.

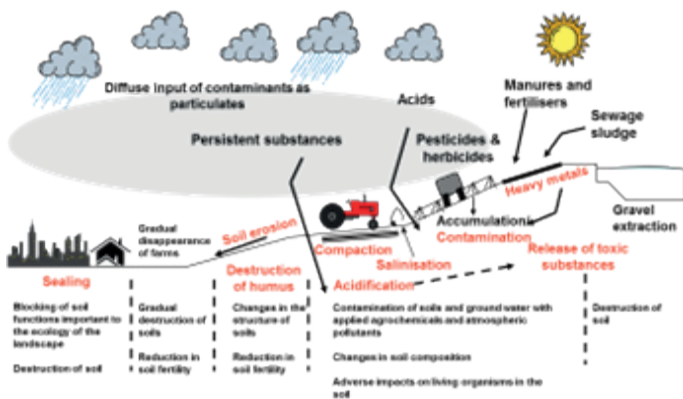
In most of these goals and targets, soils play a prominent role, because they are at the crossroad between the atmosphere, the geosphere, the hydrosphere, and the biosphere. Especially the nexus of soils, plants, animals, and human health is one important asset within the realization of sustainable global development. According to the European Commission (EC, 2006), soils have 7 main func-

tions, 4 of them linked to ecological purposes (1, 2, 3, and 6) and 3 mainly linked to technical, social, economic and cultural ones, all of them strategic for the achievement of the Sustainable Development Goals.

Soil functions		Sustainable Development Goals	
		Directly targeted	Indirectly targeted
1. Biomass production, including agriculture and forestry	The sustainable production of plant biomass ensures food, fodder, and renewable energy, which is the basis of human and animal life	2. End hunger, achieve food security and improved nutrition and promote sustainable agriculture	1. End poverty in all its forms everywhere 7. Ensure access to affordable, reliable, sustainable and modern energy for all
2. Storing, filtering and transforming nutrients, substances and water	Healthy soils filter and buffer organic and inorganic components, including contaminants, protect the food chain and the groundwater against contamination	6. Ensure availability and sustainable management of water and sanitation for all 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss	14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development
3. Biodiversity pool, such as habitats, species and genes	Soil biodiversity is the largest gene reserve on earth and a main component of the one health concept	forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss	3. Ensure healthy lives and promote well-being for all at all ages
4. Physical and cultural environment for humans and human activities	Soil serves as the physical basis for the development of houses, industrial premises, roads and other facilities. When completely sealed, soils lose most of their ecological functions	11. Make cities and human settlements inclusive, safe, resilient and sustainable	

Soil functions		Sustainable Development Goals	
5. Source of raw material	Soils are source of peat, clay, sand, gravel, and minerals. When completely excavated, soils lose most of their ecological functions	9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation	
6. Acting as carbon pool	Soils contain the highest quantity of organic carbon in the earth system after the oceans.	13. Action to combat climate change and its impacts	
7. Archive of geological and archaeological heritage	Soils are a natural and cultural heritage and a historical memory, allowing for understanding the history of humans and the environment	Soils are a natural and cultural heritage and a historical memory, allowing for understanding the history of humans and the environment	

On the other hand, improper soil management is the main driver of unsustainable development. (Figure 1)



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velopment goals of the United Nations: An International Union of Soil Sciences perspective. *Geoderma Regional*, 25: e00398.

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## Past President Prof. Laura Bertha Reyes-Sánchez

During the Eighth edition of the educational project of the Argentine Association of Soil Science and in conjunction with CREA-Argentina, the IUSS Past President Laura Bertha Reyes Sánchez was invited to give online for all of Latin America on June 18, 2024, the keynote lecture "The importance of an Inter-disciplinary Education in Soil Science for all".

\* On June 24, 2024, the IUSS President Laura Bertha Reyes-Sánchez was invited to offer the Opening lecture in the 10th National Symposium on the Control of Soil Degradation and Recovery which took place from June 24 to 27 in Burgos, Spain.

\* On October 3 the IUSS president Laura Bertha Reyes Sánchez was invited to participate with an online conference to deliver the IUSS perspective about "The reason for education in Soil Science" during its XXI Colombian Congress of Soil Science, held in Medellín from October 1 to 4, 2024.

\* From October 20 to 24, 2024, the IUSS Past President participated in the IUSS Inter-Congress meeting 2024 in Nanjing, China.



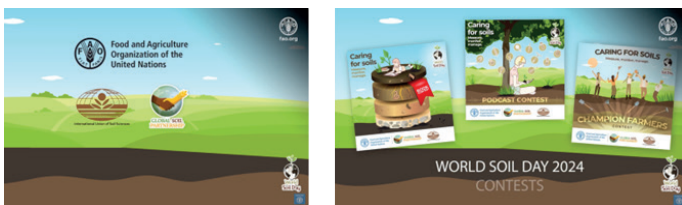
\* IUSS president Laura Bertha Reyes Sánchez was invited to offer an online conference to present the IUSS perspective on soil degradation and the education needed to stop it during the V International Symposium for World Soil Day organized by the Ecuadorian focal point of the Global Soil Partnership and the Soil Science Society of Ecuador, on November 13, 2024.

\* In a message broadcast by Radio and Television of Veracruz on December 4th, IUSS Past President Laura Bertha Reyes Sánchez addressed to the audience in Mexico and Latin America to promote and celebrate World Soil Day, launching for all Spanish-speaking children the Spanish version of the book "Soil is a Source

of Life, Water and Food” <https://www.iuss.org/soilpublications/iuss-publications/elsuelo-fuente-de-vida->

\* Once again, the IUSS-FAO World Soil Day 2024 Celebration was a great success. As in recent years, IUSS Past President Laura Bertha Reyes Sánchez participated actively and this year proposed the Video Podcast contest in addition to the traditional children’s booklet contest.

This year the contest winner’s announcement of both “Caring for Soils: Measure, monitor, manage” FAO-IUSS children’s book and Video podcast contest was presented in video by the Princess of Thailand on December 5, 2024, from Bangkok, Thailand. [https://www.youtube.com/watch?v=Bp-bCT\\_BeK7c](https://www.youtube.com/watch?v=Bp-bCT_BeK7c)



\* Celebrating World Soil Day on December 5, the IUSS Past President Laura Bertha Reyes Sánchez was invited by the National Academy of Agrarian Sciences of Ukraine, the Ministry of Agrarian Policy and Food of Ukraine, and the Ukrainian Society of Soil Scientists and Agrochemists to offer the opening speech during the International Scientific and Practical Conference “Caring for Soils in War and Peace: Status, Monitoring and Management” held in Kyiv, Ukraine.

\* The IUSS Past President Laura Bertha Reyes Sánchez offered a congratulatory online speech during the Soil Science Society of Chile’s World Soil Day celebration in recognition to their Past President on December 5th, 2024.

\* On December 7, 2024, celebrating World Soil Day, IUSS President Laura Bertha Reyes Sánchez addressed a message on the importance of global action for soil conservation to Peru, Ecuador, Colombia, Panama, Bolivia, the Dominican Republic, Venezuela, Chile, Paraguay, Argentina, Brazil, Uruguay, and Mexico via a live television broadcast from the Latin American Forum on Sustainable Agriculture.

## Report from the IUSS Secretariat

During the last six months of 2024 the Secretariat

at has been buzzing with activities. First and foremost, the welcoming of our new Full Members like Albania, Egypt, Moldova and Vietnam, and the setting up of the Centennial Issue of the Bulletin. The work has progressed well beyond this issue, with the publishing on our website of the Book of Excursions and the Book of Extended Abstract well on its way after a good, long process to collect the papers from the Congress participants.

The month of September saw the full participation of the Secretariat and the Secretary in the G7, Divinazione Expo 2024, Agriculture and Fishery, in the wonderful setting of Ortigia, in Sicily, Italy. During the event, the Secretariat, together with CREA, hosted and managed an event where global challenges related to water and soil management were addressed. The event had an excellent press review, with more than 32 pages dedicated to the event, 12 agency news, 10 articles and 9 videos.



Whitin the FAO World Food Forum, together with FAO and CREA, we participated into the Inno-Walk: a walk across the beauty of the Eternal City, from FAO headquarters to CREA ones while talking about agro-innovation and soil heritage for a sustainable agri-food system, bearing in mind the motto of the event “leaving no-one behind”. At the FAO Media Corner, Irene Fabbri, the Secretary, together with Cristina Giannetti, IUSS Communications Manager and Filiberto Altobelli, Head of the Secretariat, was invited to talk about the soil contribution for a more fair, sustainable and resilient agri-food system.



From left to right, Irene Fabbri and Filiberto Altobelli at FAO World Food Forum (ph. I. Fabbri)

The month of October saw one of the peaks of our year, the Inter-Congress in Nanjing, China, together with the Soil Science Society of China, in collaboration with the Institute of Soil Science Chinese Acad-

emy of Sciences (ISSCAS) and Pedosphere. During this event, the new President Elect was voted together with the new Honorary Members. Moreover, during this time, the IUSS Executive Committee was able to discuss with the Full Members common grounds, achievements, and future perspective of our Union.



Giuseppe Corti and Cristina Giannetti awarded by Daniele Di Santo, President JIEF (ph. Irene Fabbri)



Group photo at the Council Meeting in Nanjing (ph. Irene Fabbri)

Well into the end of the year, the Secretary and the then President represented the IUSS at the IV edition of the Italian Knowledge Leaders in Rome, to talk about congresses contribution to culture and science.

The Secretariat hosted a prestigious event in Rome for the occasion of the World Soil Day, under the patronage of the Italian Ministry of Agriculture, CREA, SISS, ARGALazio, GREENACCORD, CO-NAF and the Italian Soil Partnership.



The year ended with the participation of the Secretariat, with his Head Giuseppe Corti, into the Italy-Japan forum, under the patronage of the Senate of the Republic of Italy and in collaboration with CREA where the Secretariat is hosted and managed. A very important moment to discuss about

the importance of soils in our two Countries, sustainability and soil conservation and management. Giuseppe Corti, Head of the Secretariat, and Cristina Giannetti, IUSS Communication Manager, were awarded Honorary Advisor status by JIEF, Japan-Italy Economic Federation, for their tireless efforts in communicating and advocating for soil.

In January 2025, the Past President and the Secretary participated into the Global Knowledge Dialogue, and the ISC Third Plenary Assembly in Muscat, Oman. The Secretary works closely with the ISC to filter and forward their many initiatives to the Full Members. So far, the IUSS has endorsed and submitted with success few candidacies for different positions advertised by the ISC, improving our presence in strategic position to bring forward our instances and mission in advancing soil sciences.

### The Secretariat in numbers

During the year 2024, the Secretariat has hosted and managed: 12 Executive Committee Meetings, 1 Forum, 1 Research Forum, 1 Council Meeting, 3 Presidents' Committee, 4 Website Task Force meetings, 13 Organizing and Scientific Committee meetings for the Centennial Congress, 3 Inter-Congress set up meetings, and 10 Secretariat meetings for the organization and management of the different activities.

Percentage of the officers' presence at the Executive Committee Meetings at the Executive Committee meeting during the year 2024

January	75%
February	79%
March	94%
April	81%
May	94%
June	94%
July	75%
August	81%
September	75%
October	81%
November	80%
December	94 %

Percentage of single presence at Executive Committee Meetings

Edoardo A. C. Costantini	President	100%
Victor O. Chude	President Elect	100%
Laura B. Reyes Sanchez	Past President	100%
Andreas Baumgarten	Treasurer	58%
Irene Fabbri	Secretary	100%
Jiabao Zhang	Vice-President Congress	75%
Xin Song	Vice-President Congress (assistant)	100%
Richard Heck	Chair of Division 1	100%
Giuseppe Corti	Chair of Division 2/ Head of the Secretariat	92%
Renfang Shen	Chair of Division 3	67%
Claudio Zaccone	Chair of Division 4	67%
Rainer Horn	Committee on Presidential Election	83%
Flavio Camargo	Committee on Statute and Structure (until Sept. 2024)	70%
Cornie Van Huyssteen	Committee on Statute and Structure (since Oct. 2024)	100%
Cristine Morgan	Committee on Prizes and Awards	58%
Kye-Hoon 'John' Kim	Committee on Budget and Finance	83%

## Social Media and Website

The communication plan for the year 2024 has been focused on capitalizing 100 years of heritage and research that have shaped the history of soil sciences- to promote among the National Societies a sense of belonging to a global community under the IUSS umbrella.

The aim is making soil sciences more easily available, being the website and the social media good platforms to share contents with a fresh style and an engaging formats and storytelling. Our publications are all freely available, among the most prominent, the 1924 Proceedings of the Fourth International Conference of Pedology when the IUSS was officially born in Rome. More than 2000 digitalized pages, an invaluable resource for researchers, academics and practitioners seeking to understand the historical development and evolution of soil sciences. During this last year, the website had almost 55.000 views and around 25.000 visitors.

Moreover, the website has implemented a form through which is possible to submit a request to join one, or more, of our Commissions and Working Groups (<https://www.iuss.org/adhere/>), and a form through which the Full Members can update important data, such as the new President, Secretary etc. (<https://www.iuss.org/full-members/>). These tools

will allow the Secretariat to keep track of the requests to join the different Divisions, Commissions and Working Groups, and to be constantly updated by the Full Members of any change in their structure, allowing the mailing lists to be regularly updated and improving, in this way, the communications at both ends.

The Alert, starting from January 2025, has a new graphic editing and will be further improved.

The social media accounts are steadily increasing their number of followers, Facebook leads the way with 15.498, followed by X with 4873 and LinkedIn with 1642, with an increase of 600 followers in the last six months. The YouTube channel needs further improvement, and so far, sports 12 videos.

During 2025, the Secretariat will address its efforts in improving the website and strengthen the communication in sight of the important engagements that await the IUSS.

## Report from the Inter-Congress, Nanjing, China

The Inter-Congress is a very important moment in the life of the Union. During this venue, the IUSS discusses with its Full Members the activities, projects and accomplishments carried out until the meeting. The annotated agenda saw the IUSS Executive Committee and Council members in talks and preparation for the World Congress of Soil Science that will be held in Nanjing in 2026 (23WCSS). Five days of intense meetings, during which the new President Elect was nominated, together with the Honorary Members, and the new IUSS Awards and amendments to the Statutes and Bye-Laws discussed, were followed by an excursion to rice fields, where the attendees could learn of the innovative techniques employed by their Chinese colleagues.



(ph. Irene Fabbri)

A tour of the Institute of Soil Science – Chinese Academy of Sciences (<http://english.issas.cas.cn/>), and a visit to the magnificent great wall of Nanjing completed the day.



(ph. Irene Fabbri)

October 20th - 24th, 2024 Nanjing International Youth Cultural Centre (IYCC), Nanjing, China (<https://iussic2024.aconf.org/>)

Organizers: Soil Science Society of China, International Union of Soil Sciences <https://iussic2024.aconf.org/>

### **Presidential Election 2024**

The voting was carried out during the IUSS Inter-Congress in Nanjing, China, on October 23-24, and saw three candidates competing for the position: Dr. Bruce Lascelles, UK Director, Sustainable Land and Management at Arcadis, and Past President of the British Society of Soil Science; Prof. Ravendra (Ravi) Naidu, Laureate Professor and Founding Director, Global Centre for Environmental Research, University of Newcastle and CEO and Managing Director, CRC for Contamination Assessment and Remediation of the Environment (crcCA-RE);

Prof. Renfang Shen Director General Institute of Soil Science, Chinese Academy of Sciences (ISSCAS), Nanjing, China, Director of the National Engineering Research Centre of Soil Nutrition and Remediation, National Development and Reform Commission, China, and Chair of IUSS Division 3.

Dr. Lascelles won with a vast majority, and the IUSS would like to congratulate him on this prestigious appointment and wishes him all the best for the challenges ahead.

During the venue, the new Honorary Members were elected, and they will be awarded of the honorary membership during the 23WCSS.

The IUSS warmly welcomes Prof Ayoade Ogunkunle, Dr. Deli Chen, Prof. Erika Micheli, Prof. Peter Schad, Prof. Rattan Lal, Prof. Sviatoslav Baliuk, Prof. Takashi Kosaki and Dr. Wolfgang Burghardt. The IUSS congratulates the new Honorary Mem-

bers on this prestigious achievement and express its gratitude for the outstanding contribution the new Honorary Members have given to the progress of Soil Sciences.

Moreover, the IUSS is pleased to welcome Prof. Cornelius van Huyssteen as the new Chair of the Statutes and Structure Committee, congratulates him on his new appointment and wishes him all the best for his new position. A warm thanks to Prof. Flavio Camargo, the outgoing Chair, for his contribution and effort as the previous Chair of the Committee.

### **New Full Members**

The IUSS is very pleased to welcome the Albanian, Egyptian, Moldavian, Moroccan, and Vietnamese Soil Science Societies as new Full Members. Congratulations!

The IUSS is looking forward to sharing knowledge and project with its new Member to bring forward soil science.

### **Stimulus Fund 2nd call**

The Stimulus Fund second call of the year has been truly successful; as follows, a brief excursus of the winning projects.

#### ***1st European Soil Judging Contest 1-5 September 2025, Alicante, Spain***

*By Dr. Jorge Mataix-Solera*

As part of the EUROSIL 2025 Congress to be held in Spain, the scope of the Soil Judging Contest is for participants to use their knowledge and practical skills to describe, understand and interpret soil characteristics in the field. Participants (in the form of teams and individuals) will describe a series of contest profiles using basic field tools, selected standards and guidelines. The winners will be selected on their ability to correctly describe each soil, evaluate potential soil functions and interpret their capacity to perform under different land use and management practices.

#### ***International Soil Science Conference (SOILS 2025) Soil Health for Sustainable Future: Bridging Soil, Agriculture, and Environmental Stewardship 6 – 8 May 2025, Penang, Malaysia***

*Dr. Wan Asrina Wan Yahaya*

The conference awards will be awarded to 10 post-grad students and/or young scientists (less than 5 years' experience and/or below 40 years) from the ASEAN countries. The winner will be determined

based on the significant research findings that are related to the conference themes as portrayed in the extended abstract by the technical team and they must be presented orally.

### ***3rd Joint workshop for the Digital Soil Mapping and GlobalSoilMap IUSS WGs***

***21st-24th January 2025, Bengaluru, India***

*Dr. Subramanian Dharumarajan*

The IUSS Stimulus Fund that we apply for will be dedicated to supporting students from Low Income Countries to attend the Conference. By students, we mean scholars being working on their MSc, PhD, or having defended their PhD after the end of 2023. The scientific committee will select the applicants on the basis of (1) the LIC criteria mandatory; (2) the novelty of the work presented; (3) gender equity (4) the diversity of countries of origin.

### **Conference Report**

#### ***3rd Joint Workshop of the IUSS Working Groups on Digital Soil Mapping and GlobalSoilMap (Soil mapping for sustainable land use planning)***

The 3rd Joint Workshop of the International Union of Soil Science (IUSS) Working Groups on Digital Soil Mapping and GlobalSoilMap (Soil mapping for sustainable land use planning) organized by ICAR-National Bureau of Soil Survey and Land Use Planning, was held from 21-24, January 2025.

The joint workshop was inaugurated on 21.1.2025 at 10.30 AM. The delegates were welcomed by V. Ramamurthy, Co-Chairman of the Organizing committee. N.G. Patil, The Director, ICAR-National Bureau of Soil Survey and Land Use Planning and the Chairman of the Organizing Committee provided the introductory remarks. Laura Poggio, Chair, IUSS working group on Digital Soil Mapping presented an overview of the conference. Milind Wadodkar, Chief Soil Survey Officer, Soil and Land Use Survey of India, New Delhi, and Ma-hesh B. Shirur, Commissioner, Watershed Development Department, Govt. of Karnataka were the guests of honour. Suresh Kumar Chaudhari, Deputy Director General (Natural Resource Management) at ICAR, New Delhi presented the inaugural address.

S. Dharumarajan, Organizing Secretary, extended the formal vote of thanks.

The inaugural ceremony was followed by technical sessions. Before the start of Session 1 a tribute was paid to Dominique Arrouays. Session 1 was on

Digital Soil Mapping Inputs: Sampling approaches and legacy soil data processing. This session had Suresh Kumar as the chair-man, Budiman Minasny as the Discussant. Seven oral presentations were delivered in the session 1 with speakers from Spain, India, Netherlands, Czech Republic, and South Africa. The session ended with a discussion on the use of legacy data, and it was concluded by the Discussant that legacy data is still a valuable data source for DSM and efforts to collect such data is important. However, legacy data (including soil maps) were collected for different purposes, and thus it is essential to evaluate the quality and representativeness of the legacy soil data.

Session 2 dealt with boosting DSM with new covariates and soil sensing data. The session was chaired by R.N.Sahoo. Luboš Borůvka served as the Discussant for the session. The session covered 9 oral presentations that were delivered by speakers from France India, USA, Czech Republic, and Sweden. The discussions covered the importance of new covariates, new applications of existing covariates, the disturbing and affecting factors in soil sensing and the effects of data treatment.

The second day 22 Jan, 2025, witnessed scientific deliberations under Sessions 3, 4, and 5. Session 3 was on developing new DSM Models and approaches. The session had D.G. Ros-siter as the discussant and Vinay Dadhwal as the Chairperson. A total of eight oral presentations were delivered during this session with the participants from India, China, USA, Germany, South Africa, and Australia.

The themes for discussion among the presenters were

- (1) using soil profile data: should we use fixed (standard) depth slices, as in GlobalSoilMap specifications, or pedogenetic horizons, as in the presentation of Marieke Ließ?
- (2) What methods to best assess SOC dynamics and model space-time data? Is the Australian approach of "genosoil/phenosoils" as presented by Budiman Minasny applicable elsewhere?
- (3) Problems with mapping soil thickness: what do we mean by "soil thickness" and which definition is most useful for various purposes (agriculture, civil engineering, geochemical modelling...)? Is the van der Westhuizen approach to right-censored data an advance?
- (4) The promise of, and problems with, deep learning, both its implementation and the in-

ter-pretation of models. How does deep learning allow to include spatial context in models, e.g., by using Convolutional Neural Networks)?

Session 4 on Evaluating DSM approaches was chaired by Sundar Balakrishna and Stephan van der Westhuizen as the discussant. The session had 5 presentations by speakers from Germany and Netherlands. The discussant was Stephan van der Westhuizen emphasized the necessity of evaluating DSM products using new models including machine learning and high-resolution products. Two main themes that stood out from Session 4, Evaluating DSM Products, were that digitally derived soil maps should be assessed beyond traditional evaluation statistics (e.g., RMSE) and that (machine learning) models should undergo more thorough benchmarking. In terms of the former:

Relying solely on evaluation statistics is limited and does not give the complete picture of the model's capability.

- Aim to evaluate maps for its patterns to reality.
- Make use of interpretative machine learning (iml).
- Perform diagnostics on model residuals.

In terms of the latter (benchmarking):

- Single split evaluation statistics is not optimal for explaining model results.
- Benchmarking of models on other data sets (R package lime-Soda) for transparency.
- Sharing of code and if possible data

The final session of the day, session 5 was toward operational DSM. The discussant for the session was P. Lagacherie. This session was chaired by A.V. elmurugan. It had in total about 7 presentations by participants from India, Papua New Guinea, France, and Netherlands. The session also handled eleven short oral presentations by speakers from India.

The main conclusions of the session were as follows:

- DSM dissemination strategies are a prerequisite for effective DSM development at the local level and should be supported by an active capacity building initiative.
- DSM dissemination is already effective in

India and the Indian DSM community is ready to form an Indian group affiliated to the IUSS Pedometric Commission. Platforms have also been developed to store and disseminate the resulting DSM products to the users.

- User friendly software for easy DSM applications is already available to help newcomers in DSM. In the future, these should be complemented by data preparation facilities. Further addition of more sophisticated DSM models and approaches should be justified.

DSM and GSM Working group discussions and discussions on Indian Pedometrics were held on the end of second day.

Day 3 began with Session 6 on New Targets for DSM. Laura Poggio was the discussant and N.G. Patil was the Chairperson. There was a total of eight presentations by the speakers from Australia, Finland, Australia, India, USA, France and South Africa. The presentations described a range of different targets for DSM: Peat and C stocks, Soil districts, Nutrients and management zones, Urban soils and carbon stocks, Soil loss and hydrological properties. The discussion focussed on three main topics:

- which are the challenges for applied soil functions maps at which scale;
- how to make the maps relevant on the "ground" by involving other experts and inter-acting with stakeholders;
- districts/management zones: how these are meaningful at different scales and for different purposes. The topic of how to preserve local variability while aggregating to units for management purposes was also widely discussed.

The final session of the workshop was on the theme communicating and using DSM products. Twelve oral presentations by participants from Cameroon, Netherlands, France, Canada, Australia, Russia, South Africa, Australia, and India were delivered during the session 7 chaired by Obi Reddy and the discussant was Jose Padarian. The discussion focused on Uncertainty. The session concluded that while there need to be a limit on uncertainty, the researcher shouldn't be alarmed by shifts in uncertainty on the higher end. In addition to 66 oral presentations, there are 29 posters were presented in two sessions.

Oral and poster presentations were evaluated for different awards. Dominique Arrouays Best Digital soil mapping idea award was evaluated by D. J. Rossiter and Borůvka Luboš. Oral presentations were evaluated by Laura Poggio, Philippe Lagacherie and Budiman Minasny. Poster session was evaluated by G.P. Obi Reddy, Somsubhra Chakraborty, and Jose Padarian Campusano.

The closing ceremony was held after the presentations by Discussants. V. Ramamurthy, Head, ICAR-NBSS&LUP, Regional Centre, Bangalore welcomed the gathering. N.G. Patil and Laura Poggio gave a brief report on the conference. P. L. Patil, Vice-chancellor, University of Agricultural Sciences, Dharwad was the chief guest for the valedictory function. A.Velmurugan, ADG (NRM)-ICAR, New Delhi was the Guest of honour. During the ceremony, the different categories of awards were announced, and awardees were felicitated by the dignitaries.

The Dominique Arrouays Best New Digital Soil Mapping Idea award was evaluated by D. G. Rossiter and Luboš Borůvka and awarded to Radim Vašát for his presentation "Introducing a Soil Diversity-Based Covariate for Digital Soil Mapping Framework". The oral presentations by Sudipta Chattaraj and Jonas Schmidinger were adjudged the best. Best Poster Award was presented to Rajat Ellur, Alberto Lázaro-López and M. Lalitha. At the end, S. Dharumaran, the organizing secretary proposed the formal vote of thanks.

Last day, the delegates visited V.C.Farm, Mandya and studied soil profile. Rajendra Hegde and R. Vasundhara explained the formation of soils in southern Deccan Plateau to the delegates. In addition to the four days conference, pre-conference workshop was organized on 20.1.2025.

Two hands-on computer pre-conference training workshops were held at the Centre of Excellence for watershed management, GKVK: (1) Evaluating Digital Soil Maps by their patterns (Rossiter, Poggio) and (2) Digital Soil Mapping using Google Earth Engine (Padarian and Hurnakunti). About 40 participants attended each workshop. There are two international students (Nepal and Malaysia) and 15 Indian students were invited to the workshop using IUSS Stimulus Fund.



Valedictory function of joint workshop on digital soil mapping and GlobalSoilMap (Credit: Dr.S. Dharumaran, Organising Secretary, DSM workshop 2025 National Soil Museum of Mexico)



Award ceremony during digital soil mapping and GlobalSoilMap workshop (Credit: Dr.S. Dharumaran, Organising Secretary, DSM workshop 2025)



Field visit to VC farm, Mandya (Credit: Dr. R. Vasundhara, Senior Scientist, ICAR- NBSS&LUP)

#### *Dr. Patricio Sánchez Guzmán*

The Colegio de Postgraduados (COLPOS) offers a course on "Soil Collections" as part of the Postgraduate Program in Edaphology. This course has been taught for 40 years, during which time at least 500 monoliths have been collected from different parts of the country. However, there was no designated space for their exhibition, and unfortunately, many of them were lost.

The objectives of the Soil Museum are firstly, to conserve the specimens and, secondly, to provide them with a practical application. The museum was inaugurated on December 4, 2020, in the context of World Soil Day. One year later, it underwent a name change to the National Soil Museum (MNS), becoming the first and only museum of its kind in Mexico.

#### **Acid Sulphate Soils Working Group Website** **Dr. Anton Boman**

The ASSWG are continuously working on becoming more interactive with the scientific, as well as the general public, also outside the conferences and meetings. To do this, the ASSWG has been working on establishing a website where information about working group activities, guidelines for classifica-

tion and management of acid sulfate soils, upcoming events (conferences, seminars etc.), scientific publications etc. is found.

The website will also serve as a communication platform for both members of the ASSWG as well as for others interested in acid sulfate soils. In this call, the ASSWG has requested funding to continue the premium subscription (2-year cycle) that ends in December 2024 and includes 10GB of storage space, among other necessary features. (The project has been funded by Division 3)

### **Ecology of Soil Microorganisms**

*Dr. Alberto Acedo Becares, Prof. Taina Pennanen, Prof. Magdalena Frac, Dr. Sannakajsa Velmala*

Request for travel funds for PhD students to the 5th Conference on the Ecology of Soil Microorganisms (ESM2025) to be held in Helsinki, Finland, 15-19 June 2025 could be a good step in this direction. The conference will be organized by the Natural resources Institute Finland. The conference will be the top meeting for all scientists, technologists, experimentalists and modellers, students and practitioners working on any aspects of soil biodiversity science and its linkages to the functioning of our global bio-sphere.

The conference will provide the latest updates on soil microbial ecology and biodiversity re-search and knowledge for scientists, policy makers, regulators, environmental agencies, conservationists, land user managers and other stakeholders in the sustainable use and conservation of soils. (The request has been funded by Division 2)

From the first call of 2024, as follows the activity report of the projects which have been carried out

### **Encouragement of soil science awareness at the college level in Nsukka, Eastern Nigeria**

By Prof. Charles L.A. Asadu, Zonal Coordinator NISS SE Zone Department of Soil Science, University of Nigeria, Nsukka (UNN).

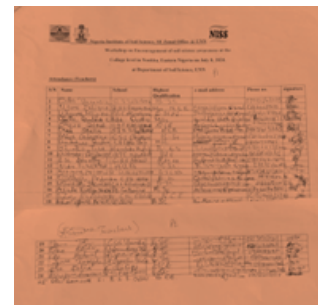
### **Nigeria Institute of Soil Science, SE Zonal Office @ UNN**

**SECOND WORKSHOP ON ENCOURAGEMENT OF SOIL SCIENCE AWARENESS AT THE COLLEGE LEVEL IN NSUKKA, EASTERN NIGERIA ON July 8, 2024, AT THE DE-PARTMENT OF SOIL SCIENCE, UNIVERSITY OF NIGERIA, NSUKKA (UNN)**

#### **Activity Report**

#### **Attendance:**

The twenty-four schools invited attended with their agricultural science teachers. Few other students and the Vice Principal of a school also attended. Registration was made between 9.00-9.30 am after which there was a self-introduction of the participants, resources persons and attendees from the Department.



#### **Welcome Address**

This was presented by Prof Charles Asadu, the NISS SEZ Coordinator. The address indicated that the workshop was sponsored by the IUSS and organized by the NISS SEZ office. He also pointed out that it was a follow up workshop held on May 20, 2024, for Soil Science Clubs and their agricultural Science teachers.

Both the Nigeria Institute of Soil Science (NISS) and IUSS are making frantic efforts to create awareness on importance of soil science study in increasing food production aimed at fighting the food insecurity currently particularly in Nigeria and generally in the World.

The objectives of this current project are to

1. let you know and appreciate soil science as the bedrock not only for agriculture but other related environmental sciences;
2. advise you to pick interest in the study of soil science as a profession that will prepare you to get a job as soon as you graduate and/or get self-employed and create jobs for others;
3. have the idea that soil is linked to human life and that without soil there will be no life on earth;
4. make you have interest on what the soil can offer by engaging farming in your schools as we have already started with four schools;
5. request all of you, including your teachers to engage in information dissemination on soil science to other schools within your reach on what you will learn from this workshop;
6. He assured participants that the lecturers

would enrich them intellectually

### **Presentation Lecture:**

The first presentation by Prof Asadu was on the content of a booklet "Career Opportunities in Soil Science" including

- Introduction of NISS and IUSS
- Soil functions
- People that manage soils
- Where soils are studied
- Areas of Specialty in Soil Science
- JOB Opportunities
- College level Subjects to be studied by prospective applicants that want to study soil science

The following lectures were delivered and each lecturer also highlighted job opportunities associated with each specialty

1. Importance of Soil survey and genesis by Prof Asadu
2. Importance of Soil classification and land evaluation by Prof Ezeaku
3. Importance of Soil physics and hydrology including irrigation and drainage practices by Prof Obalum;
4. Importance of Soil and Water Conservation by Dr Azuka,
5. Importance of Soil chemistry and fertility by Dr Unagwu,
6. Importance of Soil biology and biochemistry by Prof Uzoh
7. Importance of Environmental management by Dr Jidere



### **Break/Group Photograph**



### **Establishing School Gardens**

The four schools have established their gardens. All have maize in their gardens and three already inter-cropped maize with sweet potato, the fourth Nsukka High school will also introduce sweet potato soon.



*The school garden at CSS Nru*

### **Interactive Session**

The students and their teachers aired their views on the workshop and expressed their appreciation for the opportunity offered them by the sponsor (IUSS), the organizer (SE NISS Coordinator) and the lecturers. They confirmed that they learnt quite a lot from the workshop.

### **Books presented:**

1. "The Reality of Man-made Food Insecurity in Nigeria" to all the participants and for their libraries (82 pp)
2. "Career Opportunities in Soil Science". 12pp, to all the participants and for their libraries
3. "Professor D.M. Ekpete, First Memorial Lecture, theme: Soil: The Base of Agriculture & Life", 62pp, to all the participants and for their libraries

Launch, vote of thanks and Departure: All the participants had their lunch between 2.00 pm after which there was a vote of thanks, and the participants

departed. The event was also covered by The Sun, a national newspaper. <https://www.enugupress.ng/2024/07/coordinator-applauds-iusss-involvement-8.html>, <https://thesun.ng/students-urged-to-develop-interest-in-soil-science/>

10. Vote of thanks

### Vote of Thanks Session by the Students



10: I can conclude that the workshop was also a huge success like the first one.

*Grounding soils in Southeast Asia: A workshop and strategic roundtable for soil scientists, art-ists, practitioners, activists, and interdisciplinary researchers in and around Southeast Asia*

By Dr. Huiying Ng, Rachel Carson Center for Environment and Society, Ludwig-Maximilians University, Germany, and Dr. Dimas D. Laksmana, Department of Sociology, The University of Indonesia, Indonesia.

*Grounding soils in Southeast Asia: A workshop and strategic roundtable for soil scientists, artists, practitioners, activists, and interdisciplinary researchers in and around Southeast Asia*

By Huiying Ng, Rachel Carson Center for Environment and Society, Ludwig-Maximilians University, Germany, and Dimas D. Laksmana, Department of Sociology, Universitas Indonesia, Indonesia

As part of the International Convention of Asia Scholars (ICAS 13) at Universitas Airlangga in Surabaya, Indonesia, on July 28–August 1, 2024, we organised workshops and a roundtable to engage in and share conversations on soil health in Southeast and East Asia. The ICAS is an international conference and festival that brings together interdisciplinary scholars who work in Asia. The “Grounding Soils” workshop and “A Roadmap for Grounding Soils in Southeast Asia” strategic roundtable brought together over 20 young soil and interdisciplinary scholars, artists, and activists in the ICAS framework to share practices and knowledges on soils in Southeast and East Asia. In addition to these events, we also organised a DIY microscope making workshop with WAFTLab, a maker and hackerspace in Surabaya.

Through this series of events, we aim to explore the following questions:

1. What new approaches to monitoring, knowledge sharing, and multi-scalar governance can be shaped, building momentum from successful examples of grassroots action and participatory diplomacy?
2. What is the strength of the cultural work that activists and artists do in creating new cultural forces to renew ecological relations between people and their homes?
3. What forms of exploitation may arise as soil becomes a commodity, which are perceived as threats by those connected to the most vulnerable? How does it compare against land as a commodity?

To cultivate solidarity among different practices of soil and in thinking through these questions, we designed the Grounding Soils workshop with our collaborators who proposed multimodal activities. For example, Vivian Lee in collaboration with Joshua Ezekiel led the participants through “Body as a landscape” meditation and “participatory mapping” to guide the embodied experience of soil care.

Ismal Muntaha invited us to pay respect to the clay that he brought from his hometown in West Jawa before introducing us to a “beauty bar”, a right mixture of different kinds of soil and other ingredients can provide care to us when applied as a face mask. Axel Ceron, a doctoral candidate actively involved in the IUSS Young and Early Career Scientists working group, presented us with a global and historical picture of the gender and age characteristics of soil scientists in the IUSS since the last century.

The workshops and strategic roundtable provided conducive sites for discussion points to emerge, such as thinking about grounding soils through transregional connections, tensions that arise when practice meets policy, the ways communities contribute to the sciences of soil, soil (and water’s) use in healing or therapeutic practices, soil pedagogy and growing the right knowledges.

In the roundtable workshop, we invited the participants to share their reflections on the workshop with the broader ICAS conference participants. One participant shared how policy making that starts from grassroots level has the potential to counter the eradication of deep and respectful relations to soil when land is transformed into an object of

global investment. Overall, the participants experienced the cultivation of different ways of knowing and relating to soils from the workshop.

As one participant shared, this workshop showcases what “solidarity infrastructure” could look like, and a local conference organiser who assisted in the set-up of the workshop observed its importance in supporting (social) movements and community work. However, participants also raised the issues of who holds power, in addition to who holds space and knowledge, for example in a context where the value of land or land speculation is defined primarily according to the local market.

Additionally, Paul Rabe, a coordinator of several international networks of interdisciplinary scholars, including the River Cities Network, and a policy consultant on water management, provided helpful comments as a discussant to the roundtable.

He emphasised the need to reiterate that soils are more than resources and they are increasingly becoming battlegrounds for care and exploitation. Paul emphasized recent public awareness around PFAS “forever chemicals” in chemically treated agricultural soils from circulating water, and the importance of connecting a wider audience with soils and waters. He asked how subsoil and groundwater might be considered together with soil, given the competition for groundwater in many cities and regions.

Paul’s additional comments, noted below, provide us with the impetus to take our shared project beyond what this Stimulus Fund has offered us:

- The importance of developing transdisciplinary work together
- How do we conceive of “ourselves” – are we a network? How do we see ourselves together?
- Do we focus on Southeast Asia? What do we want to achieve?
- Who do we work with on an advocacy basis? As researchers? And for which audiences?
- What are mechanisms through which we can build together?



Living Soil Asia brings us through an introductory opening “Answer with your Feet”.



Joshua Ezekiel Sales’ “Participatory mapping” session brings participants and a curious cat into a playpen a participant has drawn up: vegetal, animal and inorganic lifeforms together.



Markus Wernli shares a short documentary of his work integrating composting into design-based research in a social space, in Hong Kong.



Ismael Muntaha shares a beauty regime for self-care with soil – with a beauty bar, consisting of soil from his home region, like kaolin clay, and other materials.



Workshop participants gather for a final photo as the day closes.

# News from National and Regional Soil Science Societies



## ***4th International Web Conference on Natural Resource Management for Global Food Security and Environmental Stewardship (GLOFES-2024)***

***Date: October 15th – 16th, 2024***

The 4th International Web Conference on Natural Resource Management for Global Food Security and Environmental Stewardship (GLOFES-2024) was held successfully in hybrid format on October 15-16, 2024, aligning with World Food Day on October 16. The online component of the conference was hosted by the Central Soil Salinity Research Institute, Karnal, with in-person sessions hosted at the KSN University of Agricultural and Horticultural Sciences in Shivamogga and the University of Agricultural Sciences in Bengaluru, India.

This significant event was organized under the aegis of the Academy of Natural Resource Conservation and Management (ANRCM), Lucknow, India. The conference was inaugurated by Dr. Edoardo A.C. Costantini, President of the International Union of Soil Science, who highlighted the IUSS's commitment to fostering international collaboration and networking to protect both natural and cultural soil heritage. Keynote addresses were delivered by Dr. Guntur V. Subbarao from the Japan International Research Center for Agricultural Sciences, Tsukuba, Japan, and Dr. Ashok K. Patra of the Indian Institute of Soil Science, Bhopal, India. Over the two days, the event featured eight lead speeches, 73 oral presentations, and 58 poster presentations, facilitated through two parallel Zoom platforms.

Discussions focused on cutting-edge approaches to natural resource conservation that support global food security and environmental stewardship, addressing crucial global issues such as pollution, water quality degradation, soil health, climate change, and sustainable development. Experts emphasized the transformative potential of smart technologies,

precision farming, and eco-friendly practices to tackle these challenges effectively. The conference served as a dynamic forum for knowledge sharing, promoting collaborations aimed at advancing sustainable natural resource management and securing a resilient future for agriculture. The event underscored the urgent need for sustainable practices in agriculture and resource management, highlighting both risks and solutions associated with natural resource consumption. Through expert insights, technical discussions, and international collaboration, the conference re-inforced a strong commitment to achieving the Sustainable Development Goals and preserving global natural resources for future generations.

With over 280 participants from 11 countries, GLOFES-2024 fostered a rich exchange of ideas, furthering global cooperation in the field of natural resource management.

### ***Clips from the conference:***



Lighting of lamp ceremony during inaugural function at UAHS, Shivamogga, India



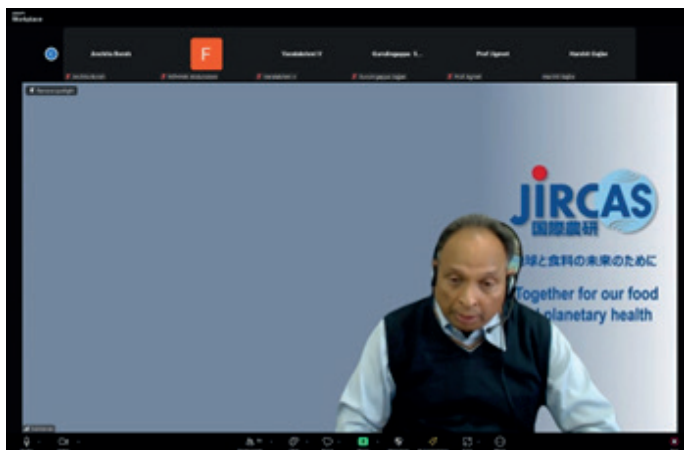
Edoardo Costantini-Chief Guest Address and lecture



Hybrid attendees UAS Bangalore, India



Inaugural program of GLOFES-24



Plenary Speech by Dr. GV Subbarao from JIRCAS, Japan

## News from Divisions

### Division 1 – Soil in Space and Time

[www.iuss.org/divisions/division-1-soils-in-space-and-time/](http://www.iuss.org/divisions/division-1-soils-in-space-and-time/)

Division 1 deals with the soil body in the landscape context. The commissions and working groups coordinate, and harmonize research activities on observation, genesis, classification and mapping of the soil body and landscapes and communicate results to the soil science community, soil users and the general public.

*Chair: Richard J. Heck/Canada*

*Past Chair: Erika Micheli/Hungary*

*Vice Chair IUSS Centennial: Stefania Cocco/Italy*

*1st Vice Chair 23rd WCSS: Ganlin Zhang/China*

*2nd Vice Chair 23rd WCSS: Ying Zhang/China*

## Summary of 2024 Scientific Events

IUSS Centennial Celebration and Congress; held in Florence, Italy; May 19th to 21st, 2024:

- \* The Division 1 Plenary Presentation, entitled "The Evolution of Pedology - Drawing from the Past, Adapting to the Future", was delivered by Dr. Alex McBratney of the University of Sydney.
- \* Members of Division 1 contributed to the organization of ten technical sessions in the "Soils in the Digi-tal Era", "Soil Sciences Impact on Basic Knowledge", as well as the "Other" catego-

ries. Aside from "The Bright Future of Pedology" session, other session names are listed below in relation to specific Commissions and Working Groups.

- \* During the Closing Ceremony, the "Chernozem of the Balti Steppe of Moldova" was proclaimed as the In-augural IUSS World Soil of the Year, with Dr. Boris Boincean accepting the award on behalf of the Moldovan Society of Soil Science. Moving forward, this activity will be evolved and coordinated through the IUSS World Soil of the Year Working Group.

International 'Division 1' Forum of IUSS Inter-Congress 2024, held in Nanjing, China, October 20th to 24th, 2024: Invited presentations were delivered from attending representatives of Division 1.

### Commission 1.1 – Soil Morphology and Micromorphology (Chair: Fabio Terribile/Italy; Vice Chair: Adam Csorba/Hungary):

- \* "Archaeological Soil Micromorphology short course" was held in London, UK; February 10th to 17th, 2024.
- \* "Course on Soil Mineralogy and Micromorphology" was held virtually by the Facultad de Agronomía, Uni-versidad de Buenos Aires, Argentina; April 29th to May 10th, 2024.
- \* "5th Virtual Micromorphology Meeting (ViMi5)" was held virtually; April 24th to 25th, 2024.
- \* "International Workshop on Archaeological Soil Micromorphology and Phytoliths", was held in Brussels, Belgium, May 6th to 8th, 2024.
- \* "9th Intensive Soil Micromorphology Course" was held in Catalonia, Spain; September 23rd to October 4th, 2024.
- \* "V Latin-American Intensive Course On Soil Micromorphology", was held in the Instituto de Geología, Universidad Nacional del Altiplano, in Puno, Perú. November 27th to 30th, 2024.
- \* "17th International Conference on Soil Micromorphology (ICoSM)" was held in Puno, Peru; December 2nd to 10th, 2024. This event was dedicated to the memory of Prof. Georges Stoops.

Website: [www.soilmicromorphology.net](http://www.soilmicromorphology.net)



2024.

\* "Soils of the World: Typical and Exotic Soils of Different Countries and Continents Webinar", lecture by A. Shmatova on "Soil micropatterns in East Europe Tundras", was held online; October 2024.

**Commission 1.3 – Soil Genesis (Chair: Endre Dobos/Hungary; Vice Chair: Yuji Maejima/Japan):**

\* "7th International Soil Classification Congress" was held, jointly with Commission 1.4, in Hokkaido, Ja-pan; June 3rd to 9th, 2024.



**Commission 1.4 – Soil Classification (Chair: Cornelius van Huyssteen/South Africa; Vice Chair: David Badía-Villas/Spain):**

\* "7th International Soil Classification Congress" was held, jointly with Commission 1.3, in Hokkaido, Ja-pan; June 3rd to 9th, 2024.

Website: [sites.google.com/a/vt.edu/iuss1-4\\_soil\\_classification/](https://sites.google.com/a/vt.edu/iuss1-4_soil_classification/)

**Commission 1.5 – Pedometrics (Chair: Alexandre Wadoux/France; Vice Chair: Simone Priori/Italy):**

\* "Pedometrics 2024: Addressing the 10 Challenges" was held, jointly with the Digital Soil Mapping Working Group, in Las Cruces/NM, USA; February 5th to 9th, 2024.

\* "Application of Proximal Soil Sensing Technologies and Beyond", "Quantifying and Mapping Soil Functions", "Novel Approaches to Process-Based Modelling in Agricultural Soils", "Digital Soil Mapping, Decision Support Tools and Soil Monitoring Systems in the EU", and "Advances in Soil Health Monitoring" sessions were held during the IUSS Centennial Celebration & Congress.

Website: [www.pedometrics.org](http://www.pedometrics.org)

**Commission 1.6 – Paleopedology (Chair: Maria Bronnikova/USA,Russia; Vice Chair: Elizabeth Sol-leiro-Rebolledo/Mexico):**

\* "Soils of the Past for Present and Future: Marking the 100th Birthday of Dan H. Yaalon" session was held during the IUSS Centennial Celebration & Congress.

Website: [sites.google.com/view/paleopedology/newsletters?authuser=0](https://sites.google.com/view/paleopedology/newsletters?authuser=0)

**Joint Commission 1.7/3.8 – Permafrost-Affected Soils (Chair: Aleksei Lupachev/Russia; Vice Chair: Adrian Unc/Canada):**

\* Official approval of conversion of the IUSS Cryosols Working Group to a Joint Commission (Division 1 and 6) was granted by the IUSS Council during the 2024 Inter Congress Meeting.

**Digital Soil Mapping Working Group (Chair: Laura Poggio/Netherlands; Vice Chair: Alessandro Samuel Rosa/Brazil)**

\* Participation and Training Session at Pedometrics 2024, held in Las Cruces/NM, USA; February 5th to 9th, 2024.

\* "Digital Soil Mapping and Assessment with remote sensing and pedometrics" session at EGU24.

\* "Digital soil mapping Digital Soil Mapping and Assessment at different scales Where to go next?" session was held during the IUSS Centennial Celebration & Congress.

\* Participation at the "GSID24 Global Symposium on Soil Information and Data", held in Nanjing, China; September 25th to 28th, 2024.

\* "Soil Mapping for Sustainable Land Use Planning, 3rd Joint Workshop of the IUSS Working Groups Digital Soil Mapping & Global Soil Map", was held, jointly with the GSM WG, in Bengaluru, India; January 21st to 24th, 2025.

**Global Soil Map Working Group (Chair: Dominique Arrouays/France; Vice-Chair Pierre Roudier/Netherlands):**

Sadly, Dr. Dominique Arrouays, the Chair of the GSM Working Group, passed away in December of 2024.

\* "Soil Mapping for Sustainable Land Use Planning, 3rd Joint Workshop of the IUSS Working Groups Digital Soil Mapping & Global Soil Map", was held, jointly with the DSM WG, in Bengaluru, India; January 21st to 24th, 2025.

**International Accreditation Working Group (Chair: Michael Walker/Australian; Vice Chair: Dawn Gibas/USA):**

\* This Working Group was officially established in 2024.

**International Soil Judging Contest Working Group (Chair: Erika Michéli/Hungary; Vice Chairs: Brian Needelman & John Galbraith/USA):**

\* Organizational meetings were held during the "7th International Congress of Soil Classification", held in Hokkaido, Japan (June 3rd to 9th, 2024), as well as virtually.

**Proximal Soil Sensing Working Group (Chair: Asim Biswas/Canada; Vice Chair: Abdul Moua-zen/Belgium):**

- \* Collaborative Webinar Seminar series with FAO GLOSOLAN; online, April to June 2024.
- \* "6th Global Proximal Soil Sensing Workshop, Unveiling Advances in Theory and Practice to Promote Adoption", was held in Ghent, Belgium; October 14th to 17th, 2024.

Website: [www.proximalsoilsensing.org/](http://www.proximalsoilsensing.org/)

**Soil Information Standards Working Group (Chair: Fenny van Egmond/Netherlands; Vice Chair: Rainer Baritz/Denmark):**

- \* "Soil information standards and systems – current initiatives and advances" session during the IUSS Centennial Celebration & Congress.
- \* Ongoing discussions with major stakeholders including Global Soil Partnership-FAO, International Network of Soil Information Institutions, and Global Soil Laboratory Network.

**Soil Monitoring Working Group:**

- \* This Working Group was closed in 2024.
- World Reference Base Working Group (Chair: Cezary Kabala/Poland; Vice Chair: Stephan Mantel/Netherlands):
- \* "WRB Field Workshop 2024" was realized during the "7th International Congress of Soil Classification", held in Hokkaido, Japan; June 3rd to 9th, 2024.
- \* "Soil classification: past and present concepts and solutions" session was held during the IUSS Centennial Celebration & Congress.
- \* Spanish version of the 4th Edition of the World Reference Base (2022) has been completed.

Website: [www.isric.org/explore/wrb](http://www.isric.org/explore/wrb)

**World Soil of the Year Working Group (Chair: Stephan Mantel/Netherlands; Vice Chair: José João Leis Leal de Souza/Brazil):**

- \* This Working Group was officially established in 2024.
- \* Inaugural IUSS World Soil of the Year Award recognized the "Chernozem of the Balti Steppe of Moldova" during the IUSS Centennial Celebration & Congress.
- \* Virtual meetings were held to evolve the award

guidelines and selection procedure, as well as to launch the call for the 2025 IUSS World Soil of the Year.

\* Special issue of Geoderma Regional, entitled "Natural and human-related variability and transformation of Chernozems on a global and regional scale", is being developed in commemoration of 2024 IUSS WYS.

Website: [www.iuss.org/world-soil-of-the-year/](http://www.iuss.org/world-soil-of-the-year/)

**Universal Soil Classification Working Group (Chair: Budiman Minasny/Australia; Vice Chair: Jinhji Huang/USA):**

\* Contributed to the Commission 1.5 sessions during the IUSS Centennial Celebration & Congress.

**Activities Currently Scheduled for 2025**

"Soils For Our Future: A Gathering of Global to Local Perspectives":

IUSS Division 1 is organizing a joint conference with the Global Soil Security community, as well as the Canadian Society of Soil Science. This meeting will take place during the week of July 20th to 25th, in the city of Winnipeg, Manitoba, in Canada. Current and evolving details can be obtained through the conference website: [www.soilsforourfuture.ca](http://www.soilsforourfuture.ca).

Special Division 1 sessions will focus on the topic of "Pedology 2025 & Beyond". A full day of plenary sessions will provide each of the Commissions and Working Groups an opportunity to present their perspective, considering the state-of-the-art and emerging aspects of their science, techniques & technologies, as well as their challenges and solutions. Two strategy sessions will subsequently allow participants, in group and collective modes, to discuss issues related to "Challenges and Opportunities for the Next Generation of Pedology" and

"Meeting the Needs for the Next Generation of Pedology".

Abstract submissions for the general conference sessions are open until March 31st, 2025. Registration is expected to open by mid-February 2025.



**WRB Excursion to Peru:**

The 2025 Excursion of the World Reference Base Working Group, "From Titicaca Lake to Amazon Basin", is being organized by the Universidad Nacional del Altiplano Puno, in Peru. This excursion will run during the period of August 11th to 16th, 2025.



Registration is open until February 28th, 2025, through the website: [forms.gle/LGbuArb-248VvmFKL7](https://forms.gle/LGbuArb-248VvmFKL7)

Further information can be obtained from the local coordinators: [ssardon@unap.edu.pe](mailto:ssardon@unap.edu.pe) or [jcloa-iza@unal.edu.co](mailto:jcloa-iza@unal.edu.co).

### “Earth’s Cryosphere Puzzles”:



This international conference, to be held in Pušchino, Russia, during the period of May 12th to 16th, 2025, being organized by IUSS Commission 1.7/3.8 “Perma-

frost-Affected Soils”, continues a tradition started in the early 1990s by the founder of the Cryosols Working Group, David Gilichinsky.

### Division 2 – Soil properties and processes

Division 2 deals with “how” the fundamental science behind our discipline and the understanding of fundamental processes

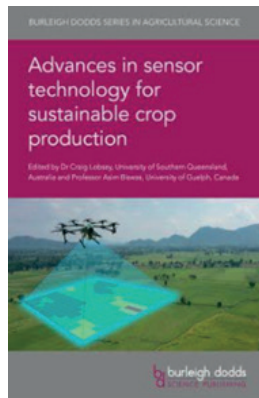
#### Structure and officers:

Chair: *Giuseppe Corti*

1st Vice Chairperson: *Xiaoyuan Yan*

2nd Vice Chairperson: *Jianming Xu*

Vice Chairperson Centennial: *Stefano Mocali*



The Chair is responsible for communication with the Commissions, Working Groups and Vice Chairs. Vice Chairs are responsible mostly for the organization of the Centennial Celebration and Congress of the IUSS.

IUSS Division 2. Commissions and Working Groups:

- Commission 2.1 – Soil Physics: Silvia Imhoff - Cezary Sławiński
- Commission 2.2 – Soil Chemistry: Karen Vancampenhout – Boris Jansen
- Commission 2.3 – Soil Biology: Alberto Ace-do Bécares - Magdalena Franç
- Commission 2.4 – Soil Mineralogy: Sofia

Lessovaia - Edson Campanhola Bortoluzzi

- Commission 2.5 – Soil Chemical, Physical, and Biological Interfacial Reactions: Elke J. Noel-lemeyer - Pablo Cornejo
- Working Group on Hydropedology: Hans-Jörg Vogel – Johan van Tol
- Working Group on International Soil Modeling Consortium: Martine van der Ploeg – Team-rat Ghezzehei

### Division Chair Report

Chair: *Giuseppe Corti*

Division 2 has a new Commissioner: after a period of vacancy, since March 25, 2024, the Vice-Chair of Commission 2.2., Soil Chemistry, is Boris Jansen from the University of Amsterdam.

The Officers of Division 2 are now 18, from 13 Countries.

All Division, Commissions, Working Groups, and members actively contributed to the organization of the Centennial Celebration and Congress of the International Union of Soil Sciences held in Rome-Florence (Italy) on May 18-21, 2024 (<https://centennialiu2024.org/>)

In particular, Giuseppe Corti

- was part of the Presidential Committee and of the Scientific Committee;
- together with Lorenzo D’Avino, organized the 7th Plant Fascination Day on 9 May, 2024;
- was part of the Organizing Committee of the Conference “Scientific Days of Imola”, Italy ‘From the floods impact to alluvial soils reclamation’ held on 2-4 July, 2024;
- together with Carmelo Dazzi, Anna Benedetti, and Edoardo A.C. Costantini edited the book ‘Soil Science in Italy’, presented at the IUSS Centennial Conference;
- together with Silvia Imhoff and Karen Vancampenhout co-organized the session titled “Soils from cold regions - genesis, functions, and microbial dynamics” with the following chairpersons: Stefania Cocco (Italy), Giuseppe Corti (Italy), Silvia Imhoff (Argentina), Karen Vancampenhout (Belgium), David Weindorf (USA), Alberto Agnelli (Italy).

#### *Xiaoyuan Yan*

- co-organized the session titled “Managing soil carbon and nitrogen for climate-smart and sus-tainable agriculture”, with the following chairpersons: Xiaoyuan Yan (China), P. Kim

(South Korea), S. Chang (Canada).

### **Stefano Mocali**

- was a member of the Organizing Committee and of the Scientific Committee;
- co-organized the session titled “Microbiome as a common thread from soil to human health: in-teraction, impact and role of soil-plant-human microbiome as a new challenge of innovative ag-riculture and quality food”, with the following chairpersons: Vincenzo Michele Sellitto (Italy), Stefano Mocali (Italy);
- co-organized the session titled “Characterizing and selecting soil health indicators at various scales”, with the following chairpersons: Isabelle Cousin (France), Claire Chenu (France), Fabrizio Ungaro (Italy), Stefano Mocali (Italy);
- co-organized the session titled “Tailored microbiome-based solutions for a sustainable agriculture”, with the following chairpersons: Annamaria Bevivino (Italy), Stefano Mocali (Italy).

### **Boris Jansen**

- co-organized the session titled “Soil organic matter transformation, stabilization and storage”, with the following chairpersons: Claudio Zaccane (Italy), César Plaza (Spain), Boris Jansen (The Netherlands).

### **Magdalena Frąc and Alberto Acedo Bécares**

- co-organized the session titled “Soil microbiomes – importance for climate resilient future, de-graded lands restoration and plant health control”, with the following chairpersons: Magdalena Frąc (Poland), Alberto Acedo Bécares (Spain), Ellen Kandeler (Germany).

### **Sofia Lessovaia and Edson Campanhola Bortoluzzi**

- co-organized the session titled “Soil mineralogy: current state and perspectives”, with the following chairpersons: Sofia Lessovaia (Russia), Edson Campanhola Bortoluzzi (Brazil).

Most of the Commissioners of Division 2 are authors of presentations and posters presented at the Centennial Celebration and Congress of the International Union of Soil Sciences ([https://drive.google.com/file/d/1mcbITzR1wfY1b4vLAaceHAy-g\\_y\\_K3vzq/view](https://drive.google.com/file/d/1mcbITzR1wfY1b4vLAaceHAy-g_y_K3vzq/view)).

Xiaoyuan Yan and Jianming Xu have been involved in the organization of the Inter-Congress meeting

held in Nanjing (China) on October 20-24, 2024.

### **New Working Group**

During the year 2025, within Division 2 a new Working Group was created named PedoFauna. The working group is made of 10 persons: Lorenzo D’Avino (Italy), Carlo Jacomini (Italy), George Gardner Brown (Brazil), Tancredi Caruso (Ireland), Celine Peolosi (France), Guénola Peres (France), Carlos Fra-goso (Mexico), Stefan Scheu (Germany), Maria Viketoft (Sweden), Zoe Lindo (USA). As first chair, they chose Carlo Jacomini (Italy).

Pedofauna considers all animals living in soil, even for a part of their life cycle. Pedofauna forming animals are present in soils of all latitudes and altitudes, under any type of climate. Pedofauna has been scarcely considered in soil science. Entire classes of soil fauna belonging to Anellida, Arthropoda, Mol-lusca, Tardigrada, and Nematoda Phyla and Protozoa Kingdom – and their ecological relationships – are partially known, while it is expected they play a massive role in the soil evolution and fertility.

As a matter of fact, knowledge about species, co-association, and interactions with microorganisms, plants, and plant roots is still scarce. Pedofauna is nowadays of great interest since it is necessary to perform several soil functions and processes and is considered able to provide, directly or indirectly, all soil ecosystem services. Because of this it is considered as a proxy for soil health.

### **Commission 2.1 – Soil Physics**

#### **Recent activities**

*Silvia Imhoff* President of AACCS (Association Argentina de la Ciencia del Suelo)

- organized monthly meeting organization of the AACCS;
- was in the organizing committee of the XXIX Congress of AACCS held in Catamarca, 21-24 May 2024;
- Contributed to the organization of the webinar IUSS May 7 – ‘Advances in soil fertility and crop nutrition status, cases from different regions of the world’ from the AACCS.

### **Commission 2.4 – Soil Mineralogy:**

#### **Recent activities**

*Edson Campanhola Bortoluzzi:*

- has been member of the Scientific commis-

sion at the 12th SIAL Food Symposium: Sustainability in the Food Industrialization on April 3-5, 2024, Passo Fundo, RS, Brazil (<https://www.upf.br/simposiosial/organizacao>);

- attended the Symposium "Use of biofertilizers and stonemeal in Cropland under no-till system" on May 2, 2024, at the Federal University of Santa Maria – UFSM.

#### Planned future activities

##### *Edson Campanhola Bortoluzzi*

- will attend the scientific event XV Reunião Sul Brasileira de Ciência do Solo. Topic: "Sustainability of soil-plant system" - 15-17 September 2024, Passo Fundo, Rio Grande do Sul State, Brazil;

- will attend the workshop "Biological inputs and new fertilizers: impacts in the soil-plant sustainability" – 15-17 September 2024, at the XV Reunião Sul Brasileira de Ciência do Solo on September) (<https://www.rsbc2024.com.br/comissaocientifica/>), University of Passo Fundo, Passo Fundo, Rio Grande do Sul State, Brazil;

- will attend the mini-course "Soil biodiversity", on August 23-24, 2024, at Sorriso, Mato Grosso, Brazil.

#### Working Group - Hydropedology

##### *Recent activities*

- Finalised the Guidelines for integrating Hydropedology in Wetland delegation guidelines and policy for South Africa.

#### Working Group – International Soil Modeling Consortium (ISMC) Working Group (<https://soil-modeling.org/>)

Events (in chronological order starting with the oldest)

- Organization of the 4th International ISMC Conference at Tianjin, China, from 5-10 May 2024;
- Organization of the 5th International ISMC Meeting.

#### Division 3- Soil Use and Management

Division 3 focuses on how we use the soil and how it links to the knowledge base of Divisions 1 and 2 to ensure that soils are used and managed in a sustainable manner. The Division is concerned with

both soil use and management in terms of agricultural production, forestry, grazing lands, and the broader environmental context. Activities to remediate degraded soil, arising from the agricultural misuse of soil or contaminations resulting from agricultural or non-agricultural activities are part of the scientific area of this Division. The aim of this Division is to ensure that through our knowledge and understanding of soil properties and processes and the distribution of soils within the landscape soils and soil quality are maintained and improved.

##### **Structure and officers:**

*Chair: Renfang Shen, China*

*Vice-chair: Fusuo Zhang, China*

*Vice-chair Centennial: Giuseppe Lo Papa, Italy*

Commission 3.1 – Soil evaluation and land use planning

Commission 3.2 – Soil and water conservation

Commission 3.3 – Soil fertility and plant nutrition

Commission 3.4 – Soil engineering and technology

Commission 3.5 – Soil degradation control, remediation, and reclamation

Commission 3.6 – Salt-affected soils

Commission 3.7 – Soils of urban, industrial, traffic, mining and military areas (SUITMA)

Working Group 3.1 – Acid sulphate soils

Working Group 3.2 – Forest soils

Working Group 3.3 – Paddy soils

##### **Commission 3.1 – Soil evaluation and land use planning**

*Chair: Jagdish Prasad, India*

*Vice-chair: Morihiro Maeda, Japan*

##### **Events:**

- Orientation Workshop for Faculty Members of NRM group towards Effective Teaching, Meaningful Research and Extension at Bihar Agricultural University, Sabour from Jan 5-9, 2024.

- Organised (as a member of the organizing committee and Past President of – the Indian Society of Soil Survey and Land Use Planning) a National Seminar on Soil Ecosystem Services for Sustainable Agriculture (SESSA) on February 21-23, 2024, at NBSS&LUP, Nagpur. Attended

as a Panellist in a special session on PEDOLOGY - A Brainstorm for the Resurgence" shared my views



and interacted with the participants.

- Attended the Executive Committee meeting of the Indian Soil Society of Soil Science, New Delhi (as Past President of the Indian Society of Soil Science), on 1st June to discuss society's activities (Technical, policy, publication issues and progress made so far) for organizing the Global Soil conference on "Caring soil Beyond Food security-climate change mitigation and Ecosystem Services" to be held in New Delhi November 19-22, 2024.
- Addressed teaching staffs and students of the Department of Soil Science and Agricultural Chemistry, Banaras Hindu University, India, on World Soil Day (Dec 5th, 2024).



### **Commission 3.2 – Soil and water conservation**

*Chair: Lillian Øygarden, Norway*

*Vice-chair: Dorota Agnieszka Dec, Chile*

#### **Events:**

- Dorota Dec: Encuentro de Jovenes Investigadores de la Ciencia del Suelo/ Meeting of Young Re-searchers in Soil Science (EJICS) was held from 15-18 April 2024 in Coiaique, Chile. Congress purpose: present the importance of soil functions in the ecosystem; soils and their impact on society; and proposals and challenges of Soil Science. Dorota Dec participated as a co-author of work presented by PhD student Jorge Ivelic (poster).
- IUSS Centennial Florence, 19- 21 May 2024: Commission 3.2 organised and was convener for the Session: "Soil and Water Conservation: Water-drainage and irrigation strategies: from securing production to protecting environment"-ID133567, presented for the thematic session "Soil governance". Lillian Øygarden presented: Lillian Øygarden, Åsmund Kvitte, Sigrun Kværnø, Marianne Bechmann, Jannes Stolte, Johannes Deelstra; Drainage from securing productivity to protecting environment. Presentation at IUSS Centennial, Florence, 19- 21 May 2024. Abstract no 138328. Soil governance. Abstract

book no. 133567, Page 217.

- IUSS Inter-Congress meeting Nanjing 20-24 October 2024. Lillian Øygarden. Oral presentation: Soil management in Northern areas – from reducing erosion to improving soil health. Keynote presentation. IUSS- International Forum. Inter Congress meeting. Nanjing 21 October 2024. Page 19 – 20.
- Lillian Øygarden. Climate change – new challenges and need of adaptation strategies for Nordic-Baltic agricultural production systems. Keynote presentation at Nordic- Baltic Reach Conference, "Resolving Environmental and Climate Change issues in agriculture" Vilnius, Lithuania, 8- 9 October 2024. Abstract book page 14.

Recent activities:

- Dorota Dec was forming part of the organizing community of the International Soil Day celebration, organized by the Austral University of Chile, through its Faculties of Agricultural and Food Sciences and Forestry Sciences and Natural Resources, the Agricultural and Livestock Service (SAG), the Chilean Society of Sciences and the Chilean Society of Soil Science. Celebration took place on 05.12.2024 in Valdivia. Information about this sampling published in different social media related with organizing units.

Planned future activities:

- Dorota Dec within the framework of the Stimulus Fund IUSS (Development of monoliths for environmental education about soils in the southern and Austral macro-zones of Chile) is participating as a collaborator in the collection and preparation of soil monoliths. Monoliths will count with basic chemical and physical characterization and will be displayed to the general public in the municipality of Valdivia, as well as at events organized by the Faculty of Agricultural and Food Sciences/UACH. First Monolith was taken in 03.12.2024.

### **Commission 3.3 – Soil fertility and plant Nutrition**

*Chair: Fernando O. Garcia, Argentina*

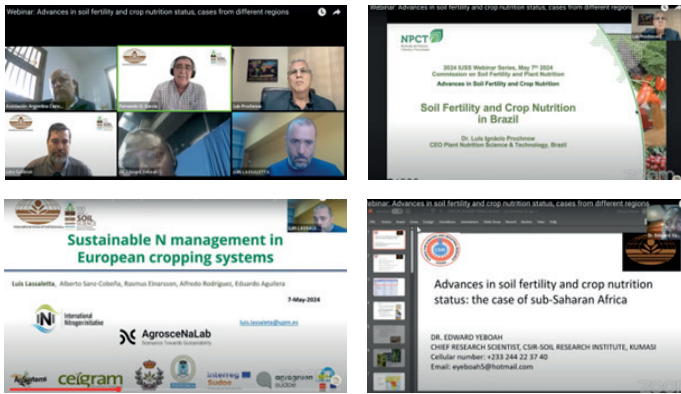
*Vice-chair: Luciano Colpo Gatiboni, Brazil*

#### **Award:**

Luke Gatiboni got the award "Searching for Excellence" from the North Carolina Extension Service as the Soil Fertility Specialist (North Carolina, USA).

**Events:**

- Webinar Advances in soil fertility and crop nutrition status, cases from different regions of the world. May 7, 2024



Session 4.3 125012 Matching Food Security and Environmental goals: Phosphorus, a Key Global Element – IUSS Centennial Congress – Florence (Italy), 19-21 May 2024



- Second International Meeting of No-till Systems. Campo 9, Caaguazú, Paraguay. 31 July–2 August 2024. Conference “Nutrients in agro-

ecosystems: Beyond the next harvest” and Field Day.



**Recent activities:**

- Support on program and fund raising to the Organizing Committee of the 2025 Latin American Soil Science Congress to be held at Santa Cruz de la Sierra, Bolivia on June 24-27, 2025.
- Participation at the 2025 World Soil Day Encounter “Measure, Monitor, Manage” organized by the Soil Science Association of Argentina (AACs) at Mar del Plata, Buenos Aires, Argentina. 5 Decem-ber 2024.



**Planned future activities:**

- A preliminary program of 2025 webinars include sessions for March and September:
  - Overview of status of soil fertility and plant nutrition in different world regions. Advances in the last 10 years. Part 2.
  - Nutrient management in low-input systems (or familiar agriculture).
  - Other possible topics: Nutrient use efficiency: Improvements from digital ag technologies. Sensors, mapping, data management, new indicators; nutrients from biofertilizers, recycling, enhanced fertilizers; biostimulants for agriculture (interaction with other commissions).
  - Participation at the 2025 Latin American Soil Science Congress to be held at Santa Cruz de la Sierra, Bolivia
  - Participation on the Organizing Committee of the 2025 International Symposium on Soil and Plant Analysis (Duhran, North Carolina, 9-13 June, 2025)

**Commission 3.4 – Soil engineering and Technology**  
 Chair: Yuanfang Huang, China  
 Vice-chair: Taku Nishimura, Japan

**Events:**

- The Commission (3.4 Soil Engineering and Technology) organized an international workshop “Building Research Vision, Career, and Impacts - Developing a discovering and impactful research career in soil, land, and environmental science and technology”, 10th ~ 13rd May 2024 at Beijing, China, together with Beijing Soil Science Society. This workshop has been initiated by a group of leading academics including Prof. Longbin Huang, The University of Queensland, Australia; Prof. Filip M. G. Tack, Ghent University, Belgium; Prof. Daniel Alessi, University of Alberta, Canada; and Prof. Jörg Rinklebe, University of Wuppertal, who are leading researchers in their respective fields. It aims to help and men-

tor early/mid-career researchers/academics to grow their discovering and im-pactful career. This group of world-class academics shared their breadth of career experience, ranging from forming strategic research vision, communicating discoveries to research communities and so-ciety, and translating science into innovative soil technology for tackling real engineering and tech-nology problems. In this workshop, Commission Chairman/Prof. Yuanfang Huang acted as a key-note speaker and responsible for organizing this workshop.

- The Commission (3.4 Soil Engineering and Technology), Beijing Soil Science Society, China Agri-cultural University and the State University of Land Use Planning of Russia hold a bilateral meeting (China-Russia) on 15th ~ 17th Nov 2024 at Beijing, China. In the meeting, the two parties will dis-cuss the role of land management, technology application on the protection of black soil in the world. Prof. Vasily NILIPOVSKIY (Deputy president, State University of Land Use Planning of Russia) and Prof. Yuanfang Huang conducted a seminar on "Russian-Chinese Cooperation in the Field of Land Management: History, Current STATE, PROSPECTS".

Planned future activities:

- The Commission (3.4 Soil Engineering and Technology), China Agricultural University and The University of Tokyo will organize a bilateral meeting (China-Japan) or international conference in 2025 at Tokyo, Japan.

### **Commission 3.6 – Salt-affected Soils**

*Chair: Jorge Batlle Sales, Spain*

*Vice-chair: Sanjay Arora, India*

#### **Events:**

- Organized 32nd National Conference on Soil, Water and Energy Management for Sustainable Agri-culture and Livelihood Security organized by SCSl at CSAUAT, Kanpur during October 18-20, 2024, as Convener.
- As Convener, organized 4th International Web Conference of ANRCM on Natural Resource Man-agement for Global Food Security and Environmental Stewardship (GLOFES, 15-16 October 2024) Organized by ANRCM, Lucknow, India KSN University of Agricultural and Horticultural Sciences, Shivamogga, India University of Agricultural Sciences, Bangalore, India
- Participated in National Symposium and Annual Convention on "Remote Sensing for

Sustainable Future: A Roadmap towards Viksit Bharat" organized by ISRS-ISG & RSAC UP during 11th -13th December 2024 at Dr. A.P.J. Abdul Kalam Technical University, Lucknow, India.

- Participated in the International Soil and Water Forum 2024 - Managing Water Scarcity and Revers-ing Soil Degradation for Sustainable and Resilient Agrifoods Systems" virtually on 9 December 2024.

- Participated and Delivered talk online on "Regional Assessment of SAS of Asia" in FAO-INSAS Meeting at Valencia, Spain, during 27-31 May 2024.

- Batlle-Sales, J. Chair of the organizing committee of the FAO-INSAS Meeting at Valencia, Spain, during 27-31 May 2024. Organizer of the field excursion.



#### **Recent activities:**

- Organized Seminar on "Caring for Soils" to celebrate World Soil Day 2024 in virtual mode under aegis of ANRCM, Lucknow, India.

- Batlle-Sales, J. (2024). Invited participation in the "Szabolcs 100 Memorial Session". HUN-REN Centre for Agricultural Research. Institute for Soil Sciences. Budapest, Hungary.

- Batlle-Sales, J. (2024). Consultative workshop on Technical Guidelines for design and management of pressurized irrigation distribution systems in water scarcity areas. Global Framework on Water Scarcity in Agriculture (WASAG). Cabo Verde, Portugal.

- Batlle-Sales, J. (2024). "Modelling of soil salinity". Technical seminar for saline soil at Khonkaen province. Land Development Department, Thailand.

- Batlle-Sales, J. (2024). "Cien años de investigación sobre suelos afectados por salinidad". V Simposio Internacional por el Día Mundial del Suelo. GSP- Ministerio de Agricultura y Ganadería de Ecuador.

**Planned future activities:**

- Plan to organize National Conference on "Resilient Soil Health Management with Resource Conservation for Agricultural and Environmental Sustainability" at Bihar Agriculture University, Sabour, India during 2025.

**Commission 3.7 – Soils of urban, industrial, traffic, mining and military areas (SUITMA)**

*Chair: Kye-Hoon John Kim, Korea*

*Vice-chair: Przemysław Charzyński, Poland*

**Award:**

IUSS honorary member: Prof. Dr. Wolfgang Burghardt founder and the 1st Chair of the IUSS Working Group SUITMA (presently commission 3.7) was elected as an Honorary Member of the IUSS during the Inter-Congress Council Meeting in Nanjing, China on October 24, 2024. The award ceremony will take place at the gala dinner during World Congress of Soil Sciences in Nanjing, China in October 2025.

**Events:**

*First SUITMA Summer School, September 8-13, 2024*

*Location: The Institute of Ecology and Environmental Sciences of Paris (IEES-Paris) Paris, France*

*Participation: 20 mostly PhD students from 12 countries*

Organized by devised by IEES-Paris researchers in collaboration with colleagues from AgroParisTech, Université de Lorraine, Wageningen University & Research, University of Naples Federico II, Technische Universität Berlin, Universidade de Santiago de Compostela

Activities: Participants attended lectures on pedogenesis and the physical, chemical and biological functioning of anthropized soils, alternating with presentations on the latest analytical methods applicable in situ or in the laboratory. Tutorial sessions were carried out both in the field (infiltration measurements, CO<sub>2</sub> flux analyses, chemical characterization using pXRF, meso- and macro-fauna inventories, etc.) and in the laboratory (IEES-Paris soil physics and biology technical platforms, chemical analyses on the IEES-Paris platform). The course also provided an opportunity for participants to learn how to respond to European calls for projects, working in groups on current issues linked to soil engineering, desalination and soil pollution.

The end of the Summer School was devoted to vis-

its to experimental sites dedicated to constructed soils hosted by associative and private partners in Paris region.

Epilogue: Feedback from participants was very positive, showing that there is a definite interest in the rehabilitation of urban and industrial soils. Scheduled every 2 years, alternating with the SUITMA congresses, these summer schools are intended to form an international network of future researchers specializing in the study of anthropized soils. The next SUITMA Summer School is initially planned to be held in Berlin in 2026.

**Planned future activities:**

*The 13th SUITMA (Soils of Urban, Industrial, Traffic, Mining and Military Areas) conference, October 5-9, 2025,*

*Location: Pisa, Italy*

Venue: The Research Area of Pisa is the largest research area of CNR. It spans over 10 hectares and hosts 13 CNR Institutes including a medical centre specialized in cardiology and respiratory medicine. The site also accommodates units of university and private companies' sharing central services for technical, logistic, ICT and security issues. More than 1500 people are employed in the Area, involved in research activities oriented to Environment and Green Chemistry, Life Science, and ICT.

Theme: SUITMAs in One Health Perspective

Newsletters:

Newsletter No. 6: June 2024

Newsletter No. 7: December 2024

**Working Group – Paddy soils**

*Chair: Mizuhiko Nishida, Japan*

*Vice-chair: Bentlo Heru Purwanto, Indonesia*

**Objectives:**

Creating opportunities for sharing and discussing the latest research findings related to paddy soils.

**Event realized:**

Paddy Soils Working Group (PSWG) organized International Symposium on Paddy Soils in IUSS Inter-Congress 2024 held at Nanjing, China on October 21, 2024, in cooperation with Soil Science Society of China and Japanese Society of Soil Science and Plant Nutrition. The title of the symposium was New Challenges in Paddy Soils Research. This symposium aimed to (i) exchange the latest research advancement on paddy soils, (ii) discuss new challenges and issues in paddy soils research,

(iii) establish an in-ternational innovation network for paddy soils research, and (iv) contribute to the development of paddy soils research and environmentally friendly rice production.

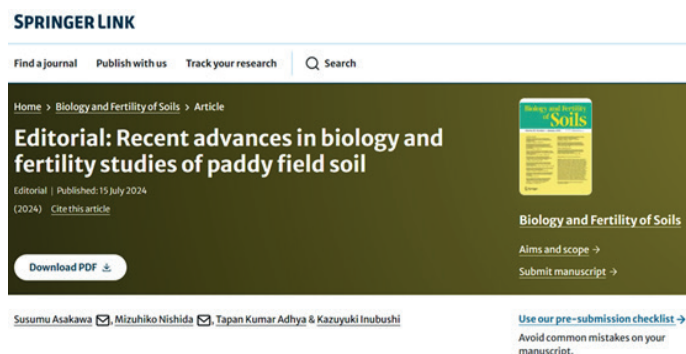
We had 8 oral papers presented by 5 countries (China, Indonesia, Italy, Japan, Korea) with about 50 participants as attached program and photos. We had very hot discussions about sustainable management of soil, nutrients and fertility in paddy soil, impacts on climate change, soil health and human health, in short and long-time scales.

#### **Planned future activities:**

PSWG is planning to organize or support another international symposium related to paddy soils to make an opportunity for sharing and discussing the latest research findings related to paddy soils.

#### **Publications:**

PSWG co-organized a special issue 'Recent advances in biology and fertility studies of paddy field soil' in *Biology and Fertility of Soils*. Chair of PSWG served as a guest editor of this issue. This special issue collects eight research papers from a variety of aspects related to biology and fertility of paddy field soil: nutrient cycles, decomposition of organic matter, production/consumption of greenhouse gases, interactions between microbes or between microbes and rice plants, etc. Chair of PSWG contributed to Editorial of this issue as a corresponding author.



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

Division 4 takes the responsibility for making the connections, transfer and outreach of our soil knowledge to society where soil and soil science needs to be understood and appreciated. It takes the information generated in the other three Divisions and the developing new scientific information, addressing the public literacy in soil science, its education, inter-national conventions, conse-

quences of human activities on soil ecosystem services, policy issues, food security, and history of the discipline. As the capstone Division it integrates the science, scientists, policy makers, and the wider community to become more aware of soil as an essential natural resource.

#### **Structure and officers**

*Chair: Claudio Zaccane, Italy*

*1st Vice Chair: Yongguan Zhu, China*

*2nd Vice Chair: Xin Song, China*

Chair and Vice Chairs have been responsible mostly for the organization of the Centennial Celebration and Congress of the IUSS (May 19-21, 2024; Florence, Italy), as well as for the organization of the IUSS Inter-congress (October 20-24, 2024; Nanjing, China). The Chair is responsible for communication with the Commissions, Working Groups and Vice Chairs.

#### **IUSS Division 4. Commissions and Working Groups:**

- Commission 4.1 – Soils and the Environment
- Commission 4.2 – Soils, Food Security, and Human Health
- Commission 4.3 – Soils and Land Use Change
- Commission 4.4 – Soil Education and Public Awareness
- Commission 4.5 – History, Philosophy, and Sociology of Soil Science
- Working Group - Cultural Patterns of Understanding
- Working Group - Young and Early Career Scientists

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- Commission 4.1 – Soils and the Environment
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- Commission 4.3 – Soils and Land Use Change
- Commission 4.4 – Soil Education and Public Awareness
- Commission 4.5 – History, Philosophy, and Sociology of Soil Science
- Working Group - Cultural Patterns of Understanding
- Working Group - Young and Early Career Scientists

### Division Chair Report

Chair: Claudio Zaccane, Italy

All Division, Commission and Working Group (WG) Chairs and members actively contributed to the organization of the Centennial Celebration and Congress of the IUSS (May 19-21, 2024, Florence, Italy) (<https://centennialiuuss2024.org/>). This resulted in the submission, management, and chairing of several scientific sessions and workshops (>20, just considering those submitted by Commission and WG Chairs and Vice Chairs). Most of Division IV sessions were really well-attended (hundreds of people were sitting in the room), having received tons of contributions (e.g., Dynamics and functions of soil organic matter under new and traditional amendments, with 20 orals plus >20 posters; Soil organic matter transformation, stabilization and storage, with 24 orals plus >20 posters).

An interactive pop-up event, "Soil Dialogues", that brought together artists from around the world who are part of the collective Ecoartspace (an international online community exploring the hidden world of soils as art), was also organized. Division

IV contributed to the organization of the Centennial Celebration and Congress of the IUSS also sponsoring several invited speakers including Eric Brevik, Claire Chenu, Kentaro Hayashi, Xia (Emma) Liang and Patricia Lea Watts.

+ 124599 - MENTOR & MENTEE WORKSHOP - CHALLENGES FOR FUTURE SOIL SCIENCE
+ 124495 - YOUTH DIGGING - THE PROGRESS OF EARLY CAREER GLOBAL SOIL RESEARCH
+ 132332 - SOIL SCIENCE AND GEOETHICS: CONTRIBUTING TO CREATE A MORE SUSTAINABLE SOCIETY
+ 133604 - HISTORIES OF INTERNATIONALIZATION OF SOIL SCIENCE
+ 133571 - DYNAMICS AND FUNCTIONS OF SOIL ORGANIC MATTER UNDER NEW AND TRADITIONAL AMENDMENTS
+ 133539 - DEVELOPMENT OF EFFICIENT SOIL EDUCATION SCHEME FOR TOMORROW
+ 133547 - LANDUSE CHANGE IMPACTS ON SOIL HEALTH
+ 133571 - CONTAMINANTS OF EMERGING CONCERNS IN SOIL: OCCURRENCE, FATE AND TRANSPORT, TOXICITY AND REMEDIATION
+ 133583 - SOIL CARBON SEQUESTRATION AND LAND USE CHANGE
+ 133611 - SOILS AND THE ENVIRONMENT
+ 131303 - SOIL ORGANIC MATTER TRANSFORMATION, STABILIZATION AND STORAGE
+ 133570 - DIGGING DEEPER: ADVANCES IN SUBSOIL SCIENCE
+ 124518 - ASSESSING SOIL SECURITY
+ 133822 - PEATLANDS IN A CHANGING WORLD

Some of the sessions organized by Division IV members during the IUSS Centennial meeting in Florence (May 19-21, 2024)

The Centennial Congress of the IUSS in Florence was also a great opportunity for Division IV members (Commissions and WGs Chairs and Vice Chairs) to meet in person, for the first time after several online meetings, and to discuss about present and future activities aimed at making our division stronger.



Top left: Division IV meeting in Florence on May 21, 2024; from the left to the right: Felipe A. Zúñiga Ugalde, Taru Sanden, Nikola Patzel, Claudio Zaccane, Bartłomiej Glińska, Miriam Muñoz Rojas, Eric Brevik, Takuro Shinano, Gary Feng, Axel Cerón González. Top right: flyer of the interactive pop-up event, "Soil Dialogues". Bottom left: Claudio Zaccane (Chair of Division IV) awarding Claire Chenu. Bottom right: a nice and relaxing networking moment in Florence, with several early career scientists (photo credits: Claudio Zaccane).

Division IV members also contributed to the co-organization and chairing of few, co-sponsored sessions (EGU-IUSS) at the European Geosciences Union General Assembly 2024 (April 14-19, 2024, Vienna, Austria; <https://www.egu24.eu/>):

- SSS5.3 "Biogeochemical and climate change-related processes controlling carbon

and element cycling in the soil-plant system” | Conveners: Claudio Zaccane, et al.

- SSS4.2 “Mechanisms of soil organic matter transformation, stabilization and storage” | Conveners: Claudio Zaccane, et al.

- SSS7.1 “Restoration and rehabilitation of degraded and contaminated soils: advancing knowledge and linking multidisciplinary approaches” | Conveners: Miriam Muñoz-Rojas, et al.

- SSS4.3 “Life and nutrient cycling in soil-plant hotspots and biological soil crusts” | Conveners: Miriam Muñoz-Rojas, et al.

Members of Division IV supported the organization of the 22nd Meeting of the International Humic Substances Society “The role of NOM and HS in achieving Sustainable Development Goals (25-30 August, 2024, Rimini, Italy; <https://ihss2024.azuleon.org/welcome>), and are involved in the organization of the Eurosoil 2025 (8-12 September 2025, Sevilla, Spain; <https://eurosoil2025.eu/>) and in the definition of the EGU 2025 programme (27 April–2 May 2025, Vienna & online; <https://www.egu25.eu/>).

Division IV members organized several events at national/international level to celebrate the World Soil Day on December 5th, 2024. Most of these events have been listed in the FAO website (<https://www.fao.org/world-soil-day/worldwide-events/wsd2024/en/>).

Finally, Division IV members are working on some open access publications (e.g., reviews, position papers, letters, guidelines) on broad topics in order to engage all Commissions and WGs Chairs/Vice Chairs. In particular, Division IV is scientifically and economically supporting the editorial initiative “The Language of Soil – A Handbook for Transdisciplinary Soil Research”, promoted by Commission 4.5. This book is proposed as a glossary of concepts and tools for transdisciplinary collaboration in soil research, addressed at scholars and students of social sciences, humanities, arts and natural sciences interested in soils; soil practitioners; transdisciplinary researchers; soil educators: communicators; and policy makers. Although its objectives are clearly in line with the overall remit of Division IV, this book will be a novel and highly influential publication and will increase the recognition of and engagement with the IUSS across disciplines.

### **Planned future activities**

- Contribute to the organization, definition and success of the 23rd World Congress of Soil Science to be held in Nanjing, China, on June 7-12, 2026 (<https://www.23wcsc.org.cn/>). In particular, Division IV will support such a meeting both in terms of session/abstract submissions and sponsoring the registration fees for 1 invited speaker for each commission/WG (7 in total). A similar approach was used also for the IUSS Centennial meeting.
- Restyle Division IV structure and update the description of Commissions and WGs.
- Sponsor some open access publications (e.g., reviews, position papers, letters, books) on broad topics to involve all Commission/WG Chairs/Vice Chairs.

### **Commission 4.1 – Soils and the Environment**

*Chair: Miriam Muñoz Rojas, Spain*

*Vice Chair: Nobuhide Fujitake, Japan*

This Commission looks at the soil as part of the ecosystem. Human activities have a strong impact on the ecosystems and the soil and environment interactions in relation to humans are particularly important. Soils – a major component of the biosphere at the interface between the lithosphere, atmosphere, and biosphere – are investigated through several international programs such as IGBP; in the same way the soil plays a considerable role in the carbon sequestration (UN Convention on Climate Change) and is the habitat for a number of species covered by the Biodiversity Convention.

### **Recent activities/events**

- CONDEGRES 2024. Participation of members of Commission 4.1 in the X National Symposium on Control of Soil Degradation and Recovery (24-27 June 2024; <https://condegres.es>). This symposium, co-sponsored by the Spanish Soil Science Society, addressed the challenges and the most innovative solutions in a key area for the European Union. The event took place at the University of Burgos, a setting that encouraged knowledge exchange and collaboration among experts from across Spain. During this four-day symposium, participants had the opportunity to dive into various thematic areas: from bioremediation technologies, the effect of environmental changes on agricultural, forest, and urban soils, to the anthropogenic impact on paleosoils.
- FUEGORED 2024. Chairing and Participation

of members of Commission 4.1 in the Fuegored 2024 meeting (16-18 October 2024; <https://fuegored2024.usal.es>). This congress involved experts in forest fires, including scientists, students, managers, and beneficiaries of the services provided by these forest ecosystems and how they are affected by fires. The topics were related to prescribed burns, social dynamics, Nature-Based Solutions and fire, forest education and risk prevention, fire modeling, impacts of fire on soils, revegetation of areas affected by fire, among many others.

#### **Planned future activities**

- Participation in the scientific organization of Eurosoil 2025 (8-12 September 2025, Sevilla, Spain; The EUROSOIL is the official meeting of the European Confederation of Soil Science Societies (ECSSS); <https://eurosoil2025.eu/>).
- Participation in the scientific committee Seville School of Microbiology 12th June Meeting.
- Organization of a SERVICE-LEARNING Activity (Post-fire Soil Evaluation)- coordinated by the University of Seville and the Institute of Natural Resources and Agrobiology of Seville (IR-NAS-CSIC) - within the framework of the project Plantando Cara Al Fuego (Planting Face to Fire). Planting Face to Fire is a project and funded by FECYT (Spanish Foundation for Science and Technology) and supported by the Thematic Network on Forest Fires "FUEGORED" (<https://www.plantandocaraalfuego.org>).

#### **Commission 4.2 – Soils, Food Security, and Human Health**

*Chair: Taru Sandén, Austria*

*Vice Chair: Takuro Shinano, Japan*

In most countries soils are essential for food production. Consideration that one third of the land area is presently used for agriculture, and the world population is increasing, creating additional pressures on agricultural land, providing enough safe and nutritious food will be an ongoing challenge. Amount the conservation of agricultural land, the role of the soils in a changing world in relationship to human health.

#### **Recent activities/events**

- Conversation on Agroecology: 1 - The role of AKIS for Agroecology - April 24, 2024 — Agroecology Partnership
- Conversation on Agroecology: 2 - The Pow-

er of Networks for Agroecology - June 26, 2024 — Agroecology Partnership

- Japanese Society of Soil Science and Plant Nutrition Public Symposium "Connecting with Society, Transforming with Society: Soil Science × Science Communication" (September 5, 2024)
- Conversation on Agroecology: 3 - The role of Research Infrastructures (RIs) for Agroecology - September 25, 2024 — Agroecology Partnership
- Conversation on Agroecology: 4 - Living Labs in the Agroecology Partnership and in the Soil Mission - October 30, 2024 — Agroecology Partnership
- Conversation on Agroecology: 5 - Agroecological transition – November 27, 2024 — Agroecology Partnership
- Japanese Society of Soil Science and Plant Nutrition, Hokkaido Branch 2024 Symposium "Soil Health" (December 5, 2024)
- Conversation on Agroecology: 6 - Exploration of the Agroecological network - December 11, 2024 — Agroecology Partnership

#### **Planned future activities**

- Monthly (except July and August) Conversations on Agroecology, organised as part of the AGROECOLOGY Partnership: Conversations on Agroecology — Agroecology Partnership. The Conversations on Agroecology will enhance the strengthening of agricultural knowledge and innovation systems (AKIS) for agroecology transition by facilitating linkages actors across regions and scales. They enable online mobilisation and networking of agroecology actors across
- Taru Sandén et al. is writing a chapter on citizen science for the Language of Soil (see Commission 4.5)
- Japanese Society of Soil Science and Plant Nutrition will have a symposium about "What is Soil Health?: Understanding, Maintaining, Improving, and Sharing Soil Health" on 26 July 2025 co-hosted with the Science Council of Japan.

#### **Commission 4.3 – Soils and Land Use Change**

*Chair: Gary Feng, USA*

*Vice Chair: Felipe Andrés Zúñiga Ugalde, Chile*

Soils play a large role as source and sinks of greenhouse gases. In a context of global sustainability. This Commission will investigate how the source/

sink functions of the soils can be managed and controlled to mitigate the impact of climate change. Of interest to all are significant changes in land use, including the effect of urbanisation, forest conversion and productive land being allocated to other uses. Such changes fall under the auspices of this Commission.

#### **Recent activities/events**

- The American Soil Science Society of America, American Society of Agronomy, and Crop Science Society of America annual meeting was held in San Antonio, Texas, USA from November 10-13, 2024. More information can be found at <https://www.acsmeetings.org/>.
- “The 15th National Congress of the Chinese Society of Soil Science and the Academic Seminar on Soil Health and Human Future” academic seminar, hosted by the Soil Science Society of China was held in Nanjing from October 20 to 23, 2024. A total of more than 1,000 people participated in this meeting. Professor Edoardo A.C. Costantini, President of the International Union of Soil Sciences, delivered a speech. The seminar focused on the research progress and latest achievements in various fields of soil science in recent years.
- The 4th International Conference on Black Soils Conservation and Utilization (ICBS4) was held from July 21 to 23, 2024, in Changchun, China. Michael L. Thompson, President of the Soil Science Society of America, and Tong Yuxin, Senior Commissioner of the Food and Agriculture Organization of the United Nations, delivered speeches and keynote speeches respectively. More than 300 representatives from countries around the world and major black soil areas attended the meeting. The conference focused on the healthy cultivation of black soil, the improvement of black soil productivity, the ecological barrier of black soil and the data mining of black soil.
- The 2024 Annual Academic Conference of the Soil Erosion and Soil and Water Conservation Committee of the Chinese Society of Soil Science was held in Guiyang from August 12 to 15, 2024. The conference was hosted by the Soil Erosion and Soil and Water Conservation Committee of the Chinese Society of Soil Science and the Soil Erosion Committee of the Chinese Society of Soil and Water Conservation. The conference was themed “Soil and Water Conservation and Ecological Civilization” and

brought together more than 400 experts and teachers and students from more than 130 universities and research institutions across the country.

#### **Planned future activities**

No activities reported

#### **Commission 4.4 – Soil Education and Public Awareness**

*Chair: Martha M. Bolanos Benavides, Colombia*

*Vice Chair: Juan C. Rey, Venezuela*

This Commission deals with teaching methods and the development of soil scientists – but also how soil-related knowledge is presented to other interested parties, as well as the information provided to the public and related general public awareness. A well-informed public is needed so that the importance of soils is understood by all.

#### **Recent activities/events**

- “Soil Management and Conservation Plan in the Buffer Zone of the Doña Juana-Cascabel Volcanic Complex National Natural Park: Recommendations for Producers in the Municipality of La Cruz, Nariño, Colombia”: this manual is part of a collaborative effort with producers to address their needs for soil conservation, improve food security, and maintain the ecosystem services provided by the strategic areas within the buffer zone of the Doña Juana-Cascabel Volcanic Complex National Natural Park.
- The Global Workshop on Soils4Nutrition, held in Bangkok, Thailand, from December 9-11, 2024, was co-organized by the FAO and the Ministry of Agriculture and Cooperatives of Thailand. The workshop aimed to address soil degradation and water scarcity through integrated and sustainable soil and water management. At the workshop, participation included the thematic session on “Land Degradation, Restoration, and Recarbonization” with the lecture “Land Degradation Neutrality and Implications for Agri-Food Systems, by Martha Bolaños-Benavides.” Additionally, there was participation as a panelist in the plenary session on “Integrated Land, Soil, and Water Management for Climate Resilience”.



(photo credits: agrosavia.co)

- World Soil Day. The Colombian Society of Soil Science - SCCS, AGROSAVIA and other entities organized a series of conferences under the theme "Caring for Soils: Measure, Monitor, Manage". The objective of this event was to raise awareness of the fundamental role of healthy soils in sustaining life, ensuring food security and preserving biodiversity. The conferences discussed soil exploration, the relationship between soil and water and sustainable agricultural practices. In addition, SCCS and AGROSAVIA committed to promoting environmental awareness and highlighting the importance of soil and water in food production.

(photo credits: agrosavia.co)

- Week of Environmental Sessions at the Huesca Campus. In December 2024, the University of Zaragoza's Huesca Campus (Zaragoza, España) organized activities focused on environmental aspects. Noteworthy was the participation of Etienne Dambrine, researcher at INRA and Université de Savoie Mont Blanc, who discussed the effects of different soils on the ecology of forests and waters.
- 2024 Environmental Culture Festival in El Retiro (Antioquia, Colombia): in November 2024, 82 children and young people from 20 municipalities participated in the final phase of the festival "Dreaming of a territory for all". This event included artistic presentations in music,

theater, trova, ecological storytelling, drawing, photography, and science and innovation, all with messages alluding to environmental care and soil conservation.

- Green October 2024 at UNICATÓLICA (Cali, Colombia): The Sustainable Campus Office organized a series of events throughout October to raise environmental awareness. Activities included debates, educational days, and workshops on waste management, flora and fauna conservation, and water and energy resource management, emphasizing the importance of sustainable practices for soil preservation.
  - XXI Colombian Congress of Soil Science, held from October 1-4, 2024, in Medellín, Colombia, focused on the theme "Soil Health as a Basis for Sustainable Development". Organized by the Colombian Society of Soil Science - SCCS, AGROSAVIA and other entities, the event brought together national and international experts, researchers, and students dedicated to the study and preservation of soils. The congress aimed to discuss strategies, research, and policies that promote soil health, recognizing its importance in agriculture, food security, and climate change mitigation. The event provided a platform for reflection and learning, emphasizing the crucial role of soil in environmental sustainability and community development.
  - CIMMYT, in collaboration with the Inter-American Institute for Cooperation on Agriculture (IICA) and with the support of the Trust Funds Instituted in Relation to Agriculture (FIRA), held the forum on Recarbonizing Agricultural Soils — Decarbonizing Agri-Food Systems, which took place from November 6-7, 2024, at CIMMYT headquarters in Texcoco, México. The forum outlined a roadmap for improving soil health and climate resilience in agricultural systems, offering opportunities to engage with global experts on carbon market strategies and sustainable financing.
- Planned future activities
- In 2025, we expect to continue preparing bibliographic material to train teachers on soils so that they can educate children between 8 and 17 years of age. The material will have standard information for all countries and, in cooperation with soil science societies, will be complemented with local information.
  - In partnership with the FAO Regional Office for Latin America and the Caribbean, training is being prepared for young technicians from the

Dominican Republic, Costa Rica, Chile, Colombia, Caribbean countries and Venezuela in the Global Soil Doctors Program, with the aim of preparing at least 40 technicians who can train soil doctors in their countries and in turn these doctors can train farmers.

*Vice Chair: Eric Brevik, USA*

No recent activities reported

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

*Chair: Alexandra Toland, Germany*

*Vice Chair: Anna Krzywoszynska, Finland*

This Commission deals with our past. It links the study of what has happened in history and how soils can be used to help explain the past changes. This Commission is not just a record of history but the use and understanding of soil information and its relationship to human development and history.

#### **Recent activities/events**

- Commission 4.5 members involved in the advisory board for the Horizon Europe Mission Soil Deal for Europe led the work on the report “Social sciences, humanities, and the arts in the EU Mission - A Soil Deal for Europe”. This report includes an introduction to social sciences, humanities, and the arts (SSHA) in the field of soil research and advises on how to incorporate SSHA into (EU) soil research funding structures (<https://mission-soil-platform.ec.europa.eu/resource-library/social-sciences-humanities-and-arts-eu-mission-soil-deal-europe>).

#### **Planned future activities**

- Division IV also decided to scientifically and economically support the editorial initiative “The Language of Soil – A Handbook for Transdisciplinary Soil Research”, promoted by Commission 4.5. This book is proposed as a glossary of concepts and tools for transdisciplinary collaboration in soil research, addressed at scholars and students of social sciences, humanities, arts and natural sciences interested in soils; soil practitioners; transdisciplinary researchers; soil educators; communicators; and policy makers. Although its objectives are clearly in line with the overall remit of Division IV, this book will be a novel and highly influential publication and will increase the recognition of and engagement with the IUSS across disciplines.

### **Working Group Cultural Patterns of Soil Understanding**

*Chair: Nikola Patzel, Austria*

### **Working Group Young and Early Career Scientists**

*Chair: Axel Cerón González, Mexico*

*Vice Chair: Dawid Kupka, Poland*

Bartłomiej Glina’s commitment has significantly influenced the Young and Early Career Scientists (YES) Working Group, as he proposed the creation of YECS to the IUSS Executive Committee in 2022 and served as its chair until 2025. Dr. Glina laid the groundwork for YECS to establish a global presence. Moving forward, he will closely follow YECS and continue participating as a mentor for our group. A new YECS member, Dawid Kupka, joined as vice-chair of the group, facilitating our members’ training and leadership within YECS.

Dr. Kupka was recently awarded a Doctor of Science degree by the University of Agriculture in Kraków. He has been an active member of YECS since its inception. Additionally, Kupka participates in several soil seminars and conducts hands-on activities for children and young people in Kraków, alongside his role as a young instructor at the Faculty of Agroforestry. We warmly welcome Dawid Kupka to his new role as YECS vice-chair and sincerely appreciate all the intense efforts that Bartłomiej Glina made to bring YECS into existence.



*Dawid Kupka participating in the YECS session during the IUSS Centennial Celebration in Florence 2024.*

#### **Recent activities/events**

- Young artists and soil scientists in Indonesia: YECS supported Southeast and East Asian artists and soil scientists in securing funding from the IUSS Stimulus Fund to develop the Grounding Soils in Southeast Asia Workshop and Strategic Roundtable, celebrated in Surabaya in July-August 2024.



11:15 – 13:00 / Post Graduate School Building, Pt.03  
5. Transmitting Knowledges: Institutions, Objects  
and Practices

**Strategic roundtable: A Roadmap for  
Grounding soils in Southeast Asia**

Roundtable Convenors, Roundtable Chairs  
Dimas Dwi Laksmana - Universitas Indonesia  
Huiying Ng - Ludwig-Maximilians University

Gatari Surya Kusuma - KUNCI Study Forum &  
Collective and Bakudapan Food Study Group  
Joshua Ezekiel Sales - Food Today Food Tomorrow,  
Halo-halo ecologies project, Participatory Food  
Systems  
Christina Maria Cecilia M. Sayson - Independent  
Researcher  
Axel Ceron - Vrije Universiteit Brussel, International  
Union of Soil Sciences (IUSS)  
Markus Wernli - Hong Kong Polytechnic University  
Vivian Lee - Independent Researcher  
Hanjing Toh - Living Soil  
Thinn Nwe Htwe - FAO Myanmar National  
Consultant

Young artists and soil scientists during the Groundings Soils in Southeast Asia Workshop and Strategic Roundtable in Surabaya (photo credits: Huiying Ng).

- YECS-Elsevier partnership: YECS issued a call in collaboration with Elsevier to enable IUSS YECS members who have published at least one scientific article to join the Early Career Re-searcher Editorial Board of one of the involved Elsevier journals (The European Journal of Soil Biology, Pedobiologia, Geoderma Regional, among others) (<https://www.iuss.org/wp-content/uploads/2024/09/Elsevier-YECS-Call.pdf>). An online kick-off meeting, led by Denny Rigby (Elsevier, London), took place in October 2024.

Poster of the YECS-Elsevier call to become an ECR Editorial Board member (photo credits: Denny Rigby, Bartłomiej Glina, and Axel Cerón González).

- School visits in Poland: Bartłomiej Glina actively visited schools and trained farmers in Poland. In October 2024, he developed hands-on experiments for children in Poznań schools.



Bartłomiej Glina during school visits in Poznan (photo credits: Bartłomiej Glina).

- YECS members now supported by the U.S. NSF: YECS collaborated with the U.S. National Science Foundation's National Ecological Ob-

servatory Network (NEON) through YECS member Lilit Pogosyan. NEON sponsored the travel of three YECS members from Mexico to Xalapa in November 2024. As a direct outcome, YECS co-established GENNE – Global Ecosystem Network of Networks, which the U.S. NSF will partially fund. The youth condition as an emerging property was warmly received, and the three participants are now members of NEON's ECR, allowing them to enhance their academic collaborations between Mexico and the U.S.



YECS members from Mexico participating in the establishment of GENNE – Global Ecosystem Network of Networks group in Xalapa, México (photo credits: Axel Cerón González).

- Winners of FAO's WSD 2025 Podcast contest: YECS members partnered to create the children's video podcast "Cempasúchitl: soils and traditions" and were recognized as one of the three winners during the World Soil Day 2024 Celebration in Thailand. The podcast can be watched at <https://www.fao.org/world-soil-day/contests/podcastcontest2024/en/>.



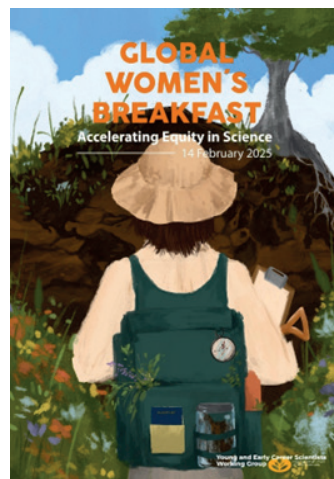
Images from the podcast "Cempasúchitl: soils and traditions" (photo credits: Axel Cerón González).

- Granted a two-year soil education program in Spanish: YECS, together with Proyecto Suelox (a Spanish soil education platform), Elizabeth Solleiro Rebolledo (IUSS Commission 1.6.

Paleo-pedology vice-chair), Laura Bertha Reyes Sánchez (former IUSS President), and a large group of professors, designers, and communication specialists, received a grant from the University of Mexico (UNAM) to develop multimedia materials for second—and third-level soil education during 2025 and 2026. The online kick-off meeting will be held in January 2025.

- World Soil Day 2024 in Kraków. On December 5, 2024, the Centre for Soil Science Education - Soil Museum at the University of Agriculture in Krakow (UAK) organized a celebration of World Soil Day. In cooperation with soil scientists from the Jagiellonian University in Krakow, work-shops were organized for students. Participants got an insight into the secrets of soil science and the challenges faced by researchers in this field. YECS member Dr. Dawid Kupka was a co-organizer of the event, during which he gave a lecture entitled “Bite the soil - soil science behind the scenes”. Workshops led by scientists from UAK and JU offered hands-on experiences, including: learning about earthworms and their crucial role in ecosystems, observing soil under a microscope, exploring the unique properties of Krakow’s urban soils, visiting a real geochemical laboratory to see science in action.

women in soil disciplines that require fieldwork, and the importance of soil education at early stages.



The Global Women’s Breakfast 2025 (photo credits: Arabela Vega, Kamila Kluczek, Leila Ja-hanbazi, Bartłomiej Głina, and Axel Cerón González).

- YECS will incorporate the vision of Dawid Kupka towards a larger exposure of our group.
- YECS is committed to active participation on social media: @yecsiuss



Hands-on experience about earthworms in the Centre for Soil Science Education - Soil Museum (photo credits: Piotr Pacanowski).

### Planned future activities

- Global Women’s Breakfast 2025 in honor of Diana Wall: Our YECS members Arabela Vega (Costa Rica), Kamila Kluczek (Poland), and Leila Jahanbazi (Iran) will lead the online event, featuring outstanding soil scientists from Brazil, Türkiye, Malawi, and Mexico. The main discussions will focus on the linguistic barriers to building a global research career for non-native English speakers, the low representation of

# Other News from the IUSS

## **Participation in the G7, Ortigia - Italy**

The IUSS participated in the G7 this last September 22nd in Ortigia, in the island of Sicily in Italy. The event "Suolo e acqua: le emergenze di oggi le risposte di domani - Soil and water: today's challenges and tomorrow's solutions" delved into the pivotal role of soil and water in agriculture, the demands they both face and the future perspectives of such important topics. The event was a two-handed project shared by the IUSS and SISS, the Italian Society of Soil Science and IUSS Full Member.

## **2024 IUSS World Soil of the Year**

The IUSS WSY Task Force has been converted to a regular Working Group within Division 1 – Soils in Space and Time.

Read more: <https://www.iuss.org/world-soil-of-the-year/>

<https://www.iuss.org/wp-content/uploads/2024/10/Word-Soil-Year-Guidelines-2025.pdf>

## **2025 IUSS World Soil of the Year**

### **Gleysol from the Carpathian Basin**

### **Hydromorphic soils supporting forest growth in the steppe region**

#### ***Soil formation***

The soil forming environment is a fluvial landscape with depositional features in the middle of the Carpathian Basin. The area is a typical backwater area, a closed depression bordered by the natural levees of abandoned river channels, creating a unique soil association with Gleysol, Solonetz and Chernozem soils. The area was drained in the second half of the 19th century and its rivers lost their water supplies or were transformed to drainage or irrigation channels. This is a beautiful polygenetic soil profile having several different soil formation stages and changing soil development accordingly, inheriting the properties and changing them to adapt to the current environment.

It has a buried soil layer at 145-155 cm depth representing an older surface with heavy clay texture of fluvio-lacustrine origin. It was later covered with coarser textured fluvio-aeolian sediment with increasing amounts of aeolian deposits mixed into the clayey material. The buried soil with very fine clay sediments show beautiful vertic properties

and slickensides. Due to its low lying position and its closed basin nature, the soil shows stagnic and gleyic properties at the same time (uterqic). It was developed under the influence of shallow, salty groundwater, and frequent, seasonal water-stagnation at the soil surface at the same time, accompanied with some slight salt accumulation in the deeper horizon. From the buried soil to the recent soil and its actual development (after water regulations) the influence of the groundwater is decreasing, but it still supports forest growth in relatively dry climatic conditions.

#### ***Functional relevance of these soils for humans and environment***

This soil association and soil-landscape developed in this environment created a special and unique cultural landscape dominated by grasslands and salt affected pastures in the Hungarian Plain. Its unique folklore and culture was recognized by the UNESCO World Heritage committee and was dedicated as World heritage site and a Biosphere Reserve area. It is also part of the Hortobagy National Park. The actual soil profile is located within the Püspökladány (Farkassziget) Salinization Experimental Yard that was founded on 1 October 1924, 100 years ago to elaborate methods of afforestation on less fertile, low productivity lowland areas with relatively dry climatic conditions and salt affected saline soil.

The major research areas focus on the selection of tree and shrub species for afforestation and forest management that are based on natural processes and can be applied to forest steppe climate. The aim is to improve the ecological stability, game bearing capacity, and the economic value of these forests by combining knowledge from different fields of sciences focusing on the biosphere, hydrosphere, lithosphere, pedosphere and atmosphere, for sustainability, carbon sequestration and climate change adaptation. These soils maintain natural and planted forest patches and provides diverse research, experimental, recreational and educational functions. These soils store and supply water and serve as refugium for plant and animal species preferring forested habitats.

#### ***Soil threats***

These soils are exposed to further drying due to decreasing groundwater level and increasing salinity. Climate change will decrease the duration and spatial extent of water saturation in the top-

soil by stagnant water. These soils supposedly turn into steppe formation in the future, while forest thinning - which is already showing on these soils - generates positive feedback regulation. Under forest cover

the deep root system of trees restricts the capillary rise to the subsoil, and the more balanced temperature and moisture regime below the forest prevents the accumulation of sodium and the salinization of topsoil layers. The decline of forest supports increased evaporation of the soil, which is bringing the sodium and water-soluble salts closer to the soil surface, generating further decline of the forest.

### Location of this soil

Gleysoils with significant remarks of environmental changes, such as salinization of groundwater, decreasing groundwater level and alternation of sediment influx as it is shown by buried soil, can be found frequently, but to a small extent in the Plains of the Carpathian Basin. They are located in abandoned river channels, and backswamp areas of the alluvial plains, which are no more directly connected with active fluvial landscape processes. The represented soil profile is in Püspökladány Experimental Station and Arboretum University of Sopron Forest Research Institute (SOE-ERTI).

### Classification WRB

Oxygleyic Chernic GLEYSOL (Loamic, Uterquic, Protocalcic, Bathyraptic, Bathyreductic, Bathyprotosalic, Thaptovertic)

### Hungarian classification

Mélyen eltemetett talajrétegű, közepes humuszos rétegű, mélyben karbonátos, mélyben sós réti talaj (Buried soil layer in the deeper horizon, with medium deep humus rich top horizon, calcareous and salty in the deeper horizon, Meadow (gley) soil).

Profile environment			
Coordinates (WGS 84):	E. sz.: 47°20'17.49"	EOV X	804709
	K.h.: 21° 5'40.47"	EOV Y	223608
Elevations a.s.l.	88.1 m	Soil climate	mesic
		Soil moisture regime	ustic
		Land cover	forest
		Land use	forest, protected Natura 2000
		Parent material:	fluvial estuarine sediment above 120 cm depth
			fluvial aleurite, clay below 120 cm depth
		Ground water	
		Further information:	Püspökladány 24/F/160/

Profile description		
Ah1	0-20	Black (2.5Y 2.5/1-m) strong, fine-medium blocky subangular and polyhedral structure, clay loam, many fine roots
Ah2	20-40	Very dark gray (2.5Y 3/1-m) strong fine-medium polyhedral structure, clay loam, moderately compacted, humus coatings
AB	40-60	Very dark grayish brown (2.5Y 3/2-m) clay loam, moderately compacted, moderately-strongly carbonated, fine calcareous, slightly gleyic, humus coatings, very fine soft and hard iron-manganese concentrations
Bk	60-80	Mottled gleyic (8YR 6/1-2) 2.5Y 5/3-m, 10YR 5/6-m) clay loam, strongly carbonated, oxidized iron concentrations, few clay coatings
CBg	80-95	Mottled gleyic & stagnic (10YR 5/6-m, 2.5Y 5/3-m) clay loam, moderately carbonated, amorphous gleyic color pattern (reddish iron concentrations)
Cl	95-120	Olive gray (5Y 5/2-m) clay loam, moderately-strongly carbonated, coarse calcareous
2Crlssz	120-145	Dark greenish gray (10Y 4/1-m) clay, slickensides, iron concentrations
3Alzb	145-155	Dark gray (2.5Y 4/1-m) clay, carbonate free
3Clz	155-175	Gray (5Y 5/1-m) clay, carbonate free
4Clz	175-	Mottled (10YR 4/6-m, 2.5Y 5/4-m, 5Y 5/3-m) silty clay, slightly carbonated, many iron concentrations

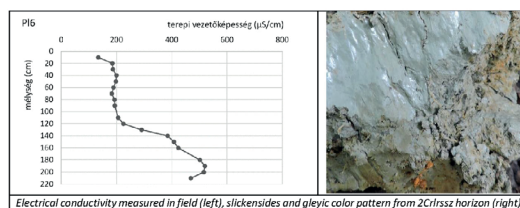
Taxonomy	
WRB 2022	Oxygleyic Chernic GLEYSOL (Loamic, Uterquic, Protocalcic, Thaptovertic, Bathyraptic, Bathyreductic, Bathyprotosalic)
Soil Taxonomy (2014)	Aquic Haplustoll

Soil physics data						
Horizons	Depth (cm)	Sand	Silt	Clay	Texture class	K <sub>sat</sub>
		>0,05 mm	0,05-0,002 mm	<0,002 mm		
Ah1	0-20	22.39	40.31	37.30	clay loam	47
Ah2	20-40	21.07	40.26	38.67	clay loam	43
AB	40-60	21.81	42.17	36.02	clay loam	49
Bk	60-80	23.66	41.59	34.75	clay loam	51
CBg	80-95	25.06	37.32	37.62	clay loam	48
Cl	95-120	25.05	37.85	37.10	clay loam	55
2Crlssz	120-145	10.87	19.05	70.08	clay	56
3Alzb	145-155	18.87	29.71	50.42	clay	54
3Clz	155-175	11.06	34.27	54.67	clay	56
4Clz	175-	17.83	39.53	42.64	silty clay	60

\*K<sub>sat</sub>=0.85\*(WC<sub>wp</sub> - water content of saturation paste in g / 100 g soil)

Soil chemistry data												
Horizons	Depth (cm)	pH <sub>1:2.5</sub>	[H <sub>2</sub> O]	m/m%	dS/m	EC <sub>e</sub> **	CaCO <sub>3</sub>	Soil Organic Matter	C <sub>org</sub>	Exchangeable cations		
										Ca <sup>2+</sup>	Na <sup>+</sup>	ESP
										cmol/kg		%
Ah1	0-20	7.20	0.05	1.33	<0.1	2.7	1.6	23.9	<0.02	<0.01		
Ah2	20-40	6.87	0.06	1.46	<0.1	1.8	1.0	20.5	<0.02	<0.01		
AB	40-60	7.90	0.06	1.28	3.2	1.1	0.6	21.4	0.03	0.11		
Bk	60-80	8.35	0.04	0.82	13.7	0.4	0.2	19.7	0.08	0.35		
CBg	80-95	8.33	0.06	1.31	6.1	0.4	0.2	20.1	0.16	0.64		
Cl	95-120	8.22	0.09	1.71	2.5	0.3	0.2	18.2	0.25	1.11		
2Crlssz	120-145	7.83	0.26	4.85	0.6	0.3	0.2	27.0	0.95	2.67		
3Alzb	145-155	7.79	0.25	4.84	0.5	0.5	0.3	23.4	1.44	4.67		
3Clz	155-175	7.86	0.32	5.97	1.1	0.2	0.1	24.3	1.93	5.88		
4Clz	175-	7.96	0.31	5.40	4.0	0.2	0.1	20.7	3.62	12.1		

\*\*calculated according (Filep - Wajfi, 1993) from total salt content



### 4p1000, SEKEM

The IUSS has been invited to endorse the Policy Brief issued by the Save Soil Movement, The International 4p1000 Initiative, SEKEM. "UNFCCC Policy Brief: Securing Our Future, Making Climate Finance Work for Agricultural Soil," Conscious Planet, 2024.

The document focuses on the need to reward farmers for improving soil health, essentially through its organic carbon content.

The IUSS Presidents Committee has endorsed the document, on which the IUSS President expressed his comments, which were transmitted to the document's authors. (<https://consciousplanet.org/it/save-soil/blog/securing-our-future-making-climate-finance-work-for-agricultural-soil>)

### Comments

#### Improving Soil Organic Carbon Content

While increasing soil organic carbon (SOC) is often viewed as a primary goal for enhancing soil health, simply focusing on this aspect can be misleading. High SOC levels can sometimes mask underlying soil issues. For instance, if soil compaction is not addressed, increased carbon might not translate into better soil function. In some cases, too much organic matter can lead to problems like reduced aeration and increased GHG emissions. Thus, a holistic approach that considers multiple soil health indicators is essential.

### *Reducing soil compaction*

Not only SOC is important for soil health. For example, the increased use of heavy machinery in agriculture has led to significant soil compaction and disruption of its structure. This compaction reduces soil porosity and permeability, impeding root growth and the movement of water and air. It can lead to decreased microbial activity and hinder nutrient cycling. To mitigate these effects and improve soil health it's vital to explore alternatives such as lighter machinery, reduced tillage practices, or adopting techniques like controlled traffic farming, which can minimize the impact on soil structure.

### *Regulating Water Fluxes*

Water management is also crucial for maintaining soil health. Proper regulation of surface and subsurface water flows can prevent erosion, improve water retention, and enhance nutrient availability. Excessive runoff can lead to nutrient leaching, while inadequate water can stress plants and soil organisms. Implementing practices such as contour farming, riparian buffers, proper irrigation and subsurface drainage can help manage water effectively. By maintaining balanced water fluxes, we can promote healthier ecosystems that support both agricultural productivity and biodiversity.

### *Conclusion*

In summary, while supporting farmers for the improvement of soil organic carbon is important, it should be part of a broader strategy that also addresses other soil issues, such as soil compaction and water management. A multifaceted approach can lead to more sustainable soil management that enhance both soil health and agricultural productivity over the long term.

### **Pan Ming Huang Prize 2024**

In 2024, the prestigious Pan Ming Huang Prize was awarded to Professor Marco Keiluweit from the University of Lausanne (Switzerland), for his in-depth research in the field of organo-mineral chemistry. The ceremony took place during the 9th held in Tsukuba, Japan, from 15-18 October 2024. In conferring the Prize, the Committee recognized the contribution of Professor Keiluweit to the improved understanding of iron chemistry and a revived interest in manganese. Professor Keiluweit's seminal work showing the active exchange of low molecular weight organic acids with previously sorbed organic matter on mineral surfaces has sig-

nificant and ongoing impacts on our understanding of the potential of mineral soils to sequester additional organic carbon and act as a climate change mitigator. In these ways, Professor Keiluweit has effectively focused the attention of the soil science community on the role of organo-mineral interactions in regulating the global carbon cycle.



The Pan Ming Huang Prize for significant contributions to advancing the understanding of the interactions between soil minerals, soil organic matter, and soil organisms is awarded by IUSS Commission 2.5 on "Soil Physical/Chemical/Biological Interfacial Reactions". Since 2015, the Prize is given every four years in the context of the "International Symposium on Minerals with Organic Components and Microorganisms" (ISMOM). Dedicated to Dr. Pan Ming Huang, past Professor and Professor Emeritus teaching at the Department of Soil Science, University of Saskatchewan from 1965 until 2009, founding Chair of both the Working Group "Interactions of Soil Minerals with Organic Components and Microorganisms" (ISMOM) and of Commission 2.5 Soil Physical/Chemical/Biological Interfacial Reactions of the IUSS, the Prize is given to young or mid-career candidates, and to candidates who have been active in ISMOM.



Prof. Marco Keiluweit together with Dr. Rota Wagai, past P.M. Huang Prize awardee and Chair of ISMOM2024

### ***Previous Pan Ming Huang Prize Winners:***

- 2019: Dr Rota Wagai, National Agriculture & Food Research Organization, Japan
- 2015: Dr Myrna Simpson, University of Toronto, Canada

## World Soil Day

The World Soil Day, initiated by the IUSS under the leadership of the Kingdom of Thailand and within the framework of the Global Soil Partnership (FAO), is celebrated in many countries around the world each 5th December since 2002. It is a recurrent highlight on the Global Agenda of the United Nations since 2014 focussing attention on the importance of healthy soils and advocating for the sustainable management of soil resources.

The date 5th December, birthday of H.M. Bhumibol Adulyadej, former King of Thailand, was chosen as a tribute to recognize his essential role in the activities promoting the establishment of the WSD.

## World Soil Day 2024

“You cannot manage what you cannot measure.”

This is at the core of this year’s World Soil Day theme ‘Caring for soils: measure, monitor, manage’. Sustainable soil management practices will enable us to produce more with less.”

FAO Director-General Qu Dongyu  
World Soil Day | 5 December 2024



The 2024 edition of the World Soil Day focused on the theme “Caring for soils: measure, monitor, manage” to underscore the importance of accurate soil data and information in understanding soil characteristics and supporting informed decision-making on sustainable soil management for food security. Priority topics include soil conditions, assessment of productivity, and adoption of tailored practices that improve soil health. Without reliable information, we miss the opportunity to fully harness soil’s potential to support agriculture, store carbon, and preserve biodiversity.

In fact, “Globally, 1.6 billion hectares of land are degraded due to human activity, with over 60 percent of this damage occurring on valuable cropland and pastureland. To reverse this trend, we need sustainable soil management based on accurate soil data and information for informed decision-making,” FAO Director-General Qu Dongyu underlined.

For the first time, the celebration took place outside FAO headquarters, in the Kingdom of Thailand. The event was connected via video link with a session of the coinciding 16th Conference of the Parties (COP16) of the United Nations Convention to Combat Desertification (UNCCD) in Saudi Arabia, where WSD is also being celebrated as part of Agri-food Systems Day.



FOTO: FAO

This joint session symbolized a unified global effort to prioritize soil health and land degradation. The session in

Riyadh also saw the launch of the Regional Action Plan for Sustainable Soil Management in the Near East and North Africa (NENA).

Participation in the WSD celebration from the royal families of Thailand and Jordan along with live broadcasts, ensured widespread international engagement.

The event featured distinguished speakers, including: Her Royal Highness Princess Maha Chakri Sirindhorn of Thailand; His Excellency Eng. Abdulrahman Abdulmohsen AlFadley, Minister of Environment, Water and Agriculture and COP16 President; His Excellency Evgeny Tomikhin, Ambassador Extraordinary and Plenipotentiary of the Russian Federation to Thailand; His Excellency Akara Prompao, Deputy Minister for Agriculture and Cooperatives, Thailand; Ibrahim Thiaw, Executive Secretary of the UNCCD; Álvaro Lario, President of IFAD; and Jong Jin Kim, Assistant Director-General of FAO.



Distinguished speakers during the opening ceremony (Foto: FAO)

## World Soil Day 2024 | KEY HIGHLIGHTS:

- + 9,000 events published on the WSD worldwide events page;
- 109 educational booklets actively shared valuable insights and messages on the importance of accurate soil data and information;
- 27 engaging podcasts brought discussions

on soil health to a wider audience;

- 550 articles published worldwide reaching
- 3.8 billion people

### World Soil Day events 2024



### Glinka World Soil Prize 2024

The 2024 Glinka World Soil Prize was awarded to the Land Development Department (LDD) of Thailand, in recognition of LDD's longstanding involvement in and promotion of important national and international initiatives targeting at sustainable soil management (SSM) at all levels.



Foto: FAO

Outstanding sustainable soil management (SSM) fostered by LDD at national level comprise measures to enhance soil health:

- Volunteer Soil Doctors Programme which has trained over 77,000 Volunteer Soil Doctors to mentor 3.8 million farmers across 12 million hectares, reducing chemical fertilizer use by 30%, cutting costs by 33%, and boosting farmers' incomes by 20%, making a tangible impact on food security and environmental sustainability
- integration of soil health education into 5,200 schools nationwide, underscoring LDD's commitment to nurturing future stewards of sustainable farming.

Furthermore, LDD invests approximately USD 140

million annually in cutting-edge research on SSM, emphasizing precision agriculture, carbon sequestration, and drought resistant crops.

Beyond national borders, LDD has established itself as a key force in regional cooperation in Southeast Asia. At global level, LDD has manifested its commitment to leadership in the establishment of the Global Soil Partnership (GSP) and the declaration of the International Year of Soils (IYS) 2015 and World Soil Day (WSD) by the United Nations General Assembly. These milestones have brought soil health on top of international development agendas, raising awareness about its critical role in food security and climate resilience.

The Glinka World Soil Prize, established in 2016, celebrates individuals and organizations that provide innovative solutions to combat soil degradation and improve food security.

As the 2024 recipient, Thailand's LDD, further solidifies its position as a global leader in the preservation and restoration of one of the planet's most vital resource: soil.

Among the award winners, Prof. Ravi Naidu (2023 and former candidate to the IUSS Presidency), and Prof. Rattan Lal (2018) former IUSS President.



Foto: FAO



### King Bhumibol World Soil Day Award

Being a fixed element of the annual World Soil Day celebrations since 2018, the King Bhumibol World Soil Day Award (WSDA), recognizes individuals and/or institutions that have successfully organized celebrations in the framework of the World Soil Day campaign of the previous year.

The winner of the 2024 King Bhumibol World Soil Day Award is the Water and Soil Department of the Ministry of Agriculture Jihad of the Islamic Republic of Iran, in recognition of the Islamic Republic of Iran's outstanding efforts in organizing and implementing impactful World Soil Day (WSD) celebrations in 2023.

The celebrations were held from 3 to 12 December 2023 under the 2023 WSD theme “Soil and water: a source of life”, involving more than 11 million people nationwide engaged in over 3,300 registered events.

Key activities were led by the Deputy of Water and Soil of the Ministry of Agriculture Jihad, involving 32 provincial organizations, the Ministry of Education, the Organization of Environmental Protection, universities, schools, pioneering farmers, private sector companies, and soil analysis laboratories.

Two national working groups comprising government agencies, academics, private organizations, and pioneering farmers led the campaign, with the support of their provincial counterparts.

The campaign also prioritized local involvement, particularly in villages, and actively engaged students, women and farmers. Over 236,900 students took part in educational programmes, while 125,760 people attended conferences and training sessions aimed at improving technical knowledge of sustainable soil management practices.



Examples of campaigns undertaken to celebrate WSD in 2023 (Source: FAO)

This year’s award was presented by the Russian Ambassador in Thailand and HRH Princess Maha Chakri Sirindhorn of Thailand, FAO’s Goodwill Ambassador to Safdar Niazi Shahraki, Deputy Minister of Water and Soil and Alireza Esmaily Falak, Head of International Affairs at the Deputy of Water and Soil, Ministry of Agriculture Jihad.

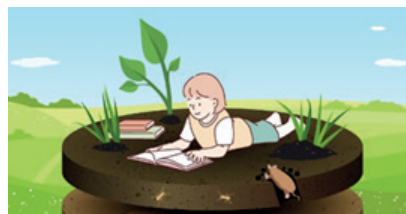
The 2024 WSD celebrations mark a milestone in the Islamic Republic of Iran’s approach to soil management. Senior leaders, including the Supreme Leader, President, and Minister of Agriculture, emphasized the key role played by soil in sustainable development.

### World Soil Day contests

Recognizing that the success of the World Soil Day

(WSD) depends on everyone’s involvement, the Food and Agriculture Organization of the United Nations (FAO), the International Union of Soil Sciences (IUSS), and the Global Soil Partnership (GSP), in celebration of World Soil Day (WSD) 2024, launched three contests: Book Contest, Farmer Contest and Podcast Contest.

### Children’s booklet contest on Soil data and information



FAO’s GSP and the IUSS invited anyone interested in the important role of comparable and reliable soil

data and information (soil scientists, researchers, professors, teachers, classrooms, individual students, soil practitioners, designers, photographers or experts from any professional background, and NGOs) to team up and submit their freestyle book proposal for children based on the WSD 2024 motto: “Caring for Soils: Measure, Manage, Monitor”. The participants had the opportunity to explain the significance of soil data and information for sustainable soil management, fostering a sense of responsibility, and inspiring children to understand the critical role soil plays for our planet.

The book was intended for children aged between 6 and 11 years.

### Possible themes for the Booklets

1. Innovative soil data collection (use of technologies like remote sensing, machine learning, drones, and soil sensors to collect and analyze soil data, enabling more accurate and immediate understanding of soil health)
2. Soil data in sustainable soil management (use of soil data and information in guiding Decision Support Systems; importance of accurate soil data to help farmers, policymakers, and practitioners implement practices that preserve soil health and combat climate change)
3. Collaboration through data sharing (help children understand ethical issues related to soil data, including ownership, usage, and the need to ensure that soil data benefits everyone, especially vulnerable populations and smallholder farmers)
4. Fair and ethical data use (help young readers understand ethical considerations related to soil data, such as ownership, usage, and the need to ensure that soil data benefits everyone,

especially vulnerable populations and small-holder farmers)

5. Soil data in everyday life (how soil data and information influence everyday life by ensuring healthy soils, food production, clean water, and resilient environments and why/how science can protect soil for future generations)

6. Local and global action (inspire children to engage in soil protection efforts, locally and globally. How can they contribute to soil health in their communities and be part of larger movements advocating for global soil conservation?)

The IUSS and FAO's GSP Selection Committee evaluated all book submissions, and **Her Royal Highness Princess Maha Chakri Sirindhorn** announced the names of the three prize-winners of the children's booklet contest:

1st prize to John James Girao from the Philippines, 2nd prize to Stacey Beardsley from the United Kingdom and 3rd prize to Mihret Dawit from Ethiopia.

The winner was chosen based on creativity and originality, quality of the informational content, technical and scientific proficiency, and artistic/visual impact of the book.

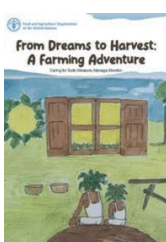
1st classified: John James Girao from the Philippines



2nd classified: Stacey Beardsley from the United Kingdom



3rd classified: Mihret Dawit from Ethiopia



### **Farmer contest: Soil health guardians**

The "Farming heroes – the guardians of soil health" contest aimed to recognize and celebrate farmers who effectively practice sustainable soil management (SSM) and share their achievements to increase soil health awareness and promote sustainable soil management globally.

Participants were required to demonstrate the use of SSM to improve soil health. Possible topics included evidence of how their practices improve soil structure, soil organic matter, biodiversity and soil fertility, or reduce pollution, acidification, erosion, salinisation and compaction. In addition, the extent to which the participant's practices have been applied and how the participants have introduced and trained other farmers to adopt these practices.

Evaluation criteria were:

- d) originality and creativity of the practices according to local conditions
- d) evidence of improved soil health
- d) adoption of the described SSM practices by other farmers
- d) recognition by the extension service system and impact on government policies.

The winners are:

- 1st classified: Mr. Bao Wei, China, recognized for his excellence in farming.
- 2nd Classified: Mr. Alirio Martinez, Guatemala
- 3rd Classified: Mr. Thiru Valluvan, India

A special award was given to Mr. Sanit Dumban, Thailand, for his innovative work as a soil doctor.

Both 1st classified Mr. Bao Wei and Mr. Sanit Dumban received their awards from Her Royal Highness Princess Maha Chakri Sirindhorn of Thailand during the ceremony.

### **Podcast contest: Caring for Soils: Measure, Manage, Monitor**

In celebration of World Soil Day (WSD) 2024, FAO, GSP, and IUSS invited soil scientists, researchers, educators, artists, and creative individuals worldwide to help educate and raise awareness about soils among children, the future stewards of the planet. The goal was to inspire children's interest in soils and explain why it is essential to measure, manage, and monitor soils to keep them healthy

and fertile.

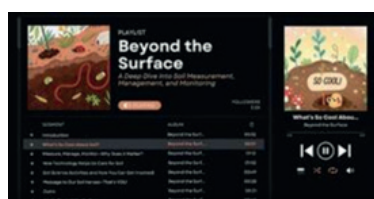
The podcast was intended for children between 6 and 12 years old, had to be in English and 5-8 minutes long, and with formats such as dialogue, interviews, stories, fables, or news analysis related to the theme.

Participants were tasked with creating a variety of innovative and engaging video podcasts aimed at educating children about the importance of soil data and information to young listeners. Podcasts should reflect the theme of “Caring for Soils: Measure, Manage, Monitor” and include clear, scientifically grounded information

### **Objectives of the Podcast contest:**

- promote scientific knowledge and highlight the importance of measuring, managing, and monitoring soils to ensure their health using a medium which is appealing to youth.
- raise awareness and emphasize the urgency of caring for soils and the role of science in keeping them healthy.
- encourage creativity and innovation in how soil science is communicated to children
- foster educational activities by engaging and encouraging children and schools to participate in soil science learning.
- highlight the role of technology and introduce children to modern tools and technologies used in soil science, such as drones, sensors, and satellite imagery. Explain how these innovations help scientists monitor soil health and contribute to more sustainable soil management practices.
- engage soil scientists, researchers, educators, and practitioners in sharing their knowledge with children
- provide a platform for experts to contribute to public awareness, making complex soil science topics accessible and fascinating for young learners.

The winners are:



1st classified: Beyond the Surface.  
Author: Ella Jane Mira (Philippines)



2nd classified: Soil Savers: Mission Earth! (The Soil Keeper's Quest).

Author Aditya Chettri; Co-author(s): Aman Kumar  
Dr. Sabyasachi Majumdar (India)



3rd classified: Cempasúchitl: soils and traditions

Author: Axel Cerón González; Co-author(s): Elizabeth Solleiro Rebolledo, Nadia Silvana Santini González, Alfredo Miguel Sánchez, Jesús Aceves Romero, Jaime Diaz Ortega, and María Yazmín Rivera Uria (Mexico/Belgium)

### **World Soil Day 2024 in China**

The theme for World Soil Day 2024 (WSD 2024) was “Caring for Soils: Measure, Monitor, Manage,” which underscores the importance of accurate soil data and information in understanding soil characteristics and supporting informed decision making on sustainable soil management for food security. (©FAO)

To celebrate WSD 2024, the Soil Science Society of China (SSSC) and related units held various events to improve public awareness of soil protection. Their contributions are described below.

### **Science Lecture at Guangdong Museum of Soil Science**



Group photo (©Institute of Eco-environmental and Soil Sciences, Guangdong Academy of Sciences)

On December 5, 2024, the Institute of Eco-environmental and Soil Sciences, Guangdong Academy of Sciences, hosted a scientific lecture at the Guangdong Museum of Soil Science. Prof. Nengchang

Chen, Director of the SSSC Working Committee on Soil Science Popularization, presented a talk that elucidated the concept of soil, discussed the factors and processes involved in soil formation, as well as its biodiversity and functions.

After the lecture, attendees had the opportunity to explore the museum, where they learned about the nearly century-long evolution of soil science and the challenges faced by soil scientists. The museum features hundreds of valuable soil specimens of various types, which enhanced the visitors' understanding of soil characteristics and health.

### ***Fun Activities Organized by the Institute of Soil Science, Chinese Academy of Sciences***

On December 5, the Institute of Soil Science, Chinese Academy of Sciences (ISSCAS) hosted two interesting activities. The first, titled "As you sow, so shall you reap," invited participants to sort table tennis balls based on the connections between soil and crops. The second activity, known as the "Soil Poetry Chain," encouraged collaboration through a series of poems, proverbs and sayings that highlighted themes such as "soil", "field", "land", and "grain". These creative and enjoyable activities successfully blended scientific exploration with cultural expression, enhancing the interest and enthusiasm of both faculty and students in soil conservation, while enriching the dialogue surrounding soil science knowledge.



*Photo of students participating in activities (©ISSCAS)*

### ***The Publication of 'Living Soil' a book to Enhance Public Awareness***

On December 5, the Phoenix Science Press released an article to introduce the science book, 'Living Soil' on social media. The book is co-authored by Prof. Yongguan Zhu, SSSC Vice President and Director General of the Research Center for Eco-environmental Sciences, CAS, Dr. Zheng Chen from Xi'an Jiaotong-Liverpool University, Prof. Nengchang Chen, Director of the SSSC Working Committee on Soil Science Popularization and Dr. Shunhua Yang from ISSCAS. The book, presented from a scien-

tific viewpoint and characterized by a clear and straightforward writing style, aims to educate the public in the fundamental nature and functions of soil, the issues surrounding soil pollution, and the associated concerns regarding food safety. The authors aspire to enhance public understanding and concern for soil health, and to encourage collective action to safeguard the future of our planet.

# IUSS Books

## **Books Review -by Edoardo A. C. Costantini National Committee on Soil and Terrain (2024).**

Australian Soil and Land Survey Field Handbook. 4th edn. CSIRO Publishing, Melbourne. 217 pp., including three appendices.

The fourth edition of the Australian Soil and Land Survey Field Handbook is a significant update aimed at addressing inconsistencies with The Australian Soil Classification. The primary objective of this revision is to enhance the ability to describe soil attributes in a way that aligns with the Australian classification system.

An important motivation for this revision was the National Soil Judging Competition, organized by Soil Science Australia since 2012. This competition has provided a valuable platform for knowledge sharing and discussions on soil and landscape description and classification. It has also challenged professionals and academics to refine their understanding of soil terminology, particularly in the context of teaching new generations of soil scientists.

The handbook remains focused on the detailed description of soil and site characteristics. Notably, significant effort has been dedicated to revising and expanding the vegetation chapter, which now spans 40 pages. While the text is well-structured and includes some drawings, the absence of photographs is a notable drawback.

Since the handbook is specifically designed for Australian soil classification, many of its soil characteristics are unique and may be challenging to correlate with other classification systems, such as the World Reference Base for Soil Resources (WRB) and the United States Soil Taxonomy and Soil Survey Manual. For instance, the nomenclature of soil horizons, the triangular texture diagram, and the classification of soil water status differ from the other standards.

The importance of soil and land surveys is growing, not only for soil classification but also for assessing soil behavior and functions, which are increasingly recognized as global concerns. These aspects are directly linked to the United Nations Sustainable Development Goals (SDGs) and international conventions on climate change, biodiversity conservation, and desertification control. As such, the handbook underscores the need for a coordinated global effort to harmonize soil survey methodologies. In

this regard, the International Union of Soil Sciences (IUSS) could play a pivotal role in facilitating this process. Initiatives such as the International Soil Judging Contest at the World Soil Congresses and the work of IUSS commissions like C1.4 (Soil Classification) and working groups such as Universal Soil Classification and World Reference Base are instrumental in this endeavor.

# Conference and Meeting Reports



## **IHSS2024 Conference “The role of Natural Organic Matter and Humic Substances in achieving Sustainable Development Goals” – 22nd Meeting of the International Humic Substances Society**

Date: August 25th – 30th, 2024

Location: Rimini Convention Center, Rimini, Italy

Read more: <https://ihss2024.azuleon.org/>

The 22nd Conference of the IHSS titled “The role of Natural Organic Matter and Humic Substances in achieving Sustainable Development Goals” (IHSS 2024) was held on August 25-30, 2024, in Rimini, Italy. The IHSS 2024 was organized by the Italian Chapter of the IHSS, with Profs. Claudio Ciavatta (Univ. of Bologna), Teodoro Miano (Univ. of Bari), and Claudio Zaccone (Univ. of Verona) as Chairs of the Organizing and Scientific Committees. All topics included in the programme, such as food security, climate change mitigation, environmental remediation, biodiversity preservation, utilization and recycling of waste biomass, etc, had a common denominator, which is the natural organic matter. The IHSS 2024 hosted researchers, students, and companies worldwide.

Almost 200 people coming from 27 countries attended this meeting, and presented their most recent results (6 keynotes, 54 orals, and 88 posters). Selected works presented during the IHSS 2024 will be published, following a traditional peer-review process, in a thematic Special Issue in Environmental Research titled Natural Organic Matter and Sustainable Development Goals (<https://www.sciencedirect.com/special-issue/313858/ihss2024-natural-organic-matter-and-sustainable-development-goals>). The common feeling was a friendly and stimulating atmosphere for sharing results and opinions, combined with a nice excursion

to Urbino and Gradara (103 participants) and a great gala dinner in the wonderful Repubblica di San Marino (126 participants).

## **50th CIEC International Fertilizer Conference – Unleashing Fertilizer Use in the Belt and Road Initiative**



Date: September 4th – 7th, 2024

Location: Weihai, Shandong (P.R. China)

Read more: <https://ciec.iae.ac.cn/>

The 50th CIEC International Fertilizer Conference took place in Linyi, Shandong (P.R. China), September 4 -7, 2024, and was entitled “Green Fertilizer Innovation and Application”.

## **22nd World Congress of Food Science and Technology The future of food is now: Development, Functionality & Sustainability**



Date: September 8th – 12th, 2024

Location: Rimini, Italy

Read more: <https://iufost2024-italy.com/>

The future was yesterday. The Congress is unanimously proved to be an enormous success not only for the participation of scientists and researchers who have something to say in the sector, but above all for the profound scientific contents shared during this full immersion. The last day discussed healthy and functional ingredients and foods, which is certainly a very trendy topic on the global market. The last day was the time for the awards ceremony for the various competitions and contests.

- The IUFOST young scientist winners: RICCARDO DE FLAVIIS, THOMAS DO, RIFNA ELENJIKAL JEROME, LINZHI JING, LINGJUN MA, RAJA

VIJAYAKUMAR, DYAH WULANDARI, TIANXI YANG, DACHUAN ZHANG.

- The Rose Spiess contest winner: Marcellus Arnold and Yoanda Victoria Rajagukguk.
- The Food sustainability winner : JOKO TRI RUBIYANTO.
- The Quiz Bowl winner: ITS Tech & Food Academy by Riccardo Cavallo, Sonia Sgarra, Tanya Nicaso, Denys Maksyshiv.
- Food Safety Without Borders (post graduate students) award: Zhaoshue YU

### **WASWAC 4th International Youth Forum on Soil and Water Conservation (IYFSWC)**



Date: September 21st – 24th, 2024

Location: Shenyang, China

Read more: <https://4th-iyfswc-2024syau.scievent.com/>

The 4th International Youth Forum on Soil and Water Conservation was Successfully Held

In order to promote the sustainable development of global scientific research in the field of soil and water conservation, and promote international exchange and cooperation of young scholars, following the pre-vious 3 sessions held in Nanchang of China in 2015, in Moscow of Russia in 2018, and in Noor of Iran in 2021, the 4th International Youth Forum on Soil and Water Conservation was held in Shenyang suc-cessfully during September 21-24, 2024.

Representatives of WASWAC and the organizing committee attended the opening ceremony.

During the forum, 12 experts have been invited to make keynote presentations, including Prof. Michael Maerker, Prof. Valentin Golosov, Prof. Borrelli Pasquale, Prof. Liu Baoyuan, Prof. Dazzi Carmelo, Prof. Zlatic Miodrag, Prof. Liu Guobin, Prof. José Luis Rubio Delgado, Prof. Benabdelouahab Tarik, Prof. Zheng Fenli, Dr. Benson Philippa Jane, and Prof. Seyed Hamidreza Sadeghi.

More than 80 young scholars made in-depth ex-

changes and discussions on the topics of soil and water conservation under climate change, soil erosion mechanisms and modeling, evaluation of soil erosion at regional scale, new technology of soil and water conservation, soil and water conservation in production and construction projects, intelligent soil and water conservation, carbon sinks for soil and water con-servation, soil and water conservation biodiversity, soil and Water Conservation Policy, education and Popularization of Science.

During the forum, an award ceremony for Outstanding Youth Paper was held, in which medals and hon-orariums were awarded to the first authors of evaluated 10 outstanding papers from China, Spain, Italy, and Iran. Tightly following this ceremony, the Youth Scientist Enlightenment Session was held, in which international experts were invited to comment and discuss the reports of the eight winners of the Out-standing Youth Papers, which broad-ened the research ideas of the young scientists. During the forum, the participants also investigated the Southern Demonstration Area of Comprehensive Soil Erosion Prevention and Control Technology Standard in Black Soil Area, observed the soil and water erosion situation, treatment technology and related scientific research progress in the field, and carried out a warm discussion.

International Youth Forum on Soil and Water Conservation is initiated and sponsored by WASWAC. It is a global academic exchange activity designed for the young generations, which is held once every three years, and has become a valuable platform in ideas exchanging, knowledge sharing, and solutions providing.

More than 200 experts and scholars from 20 countries, such as Germany, Russia, USA, Morocco, Serbia, Spain, Iran, Italy, Brazil, Ethiopia, Thailand, etc., participated in this forum.

This 4th session forum was sponsored by the World Association of Soil and Water Conservation, organized by Shenyang Agricultural University and the Chinese Society of Soil and Water Conservation, co-organized by Northeast Forestry University, Jilin Agricultural University, Northeast Institute of Geography and Agricultural Ecology of the Chinese Academy of Sciences, Jiangxi Academy of Water Resources, Liaoning Ecological Engineering Vocational College, and supported by Beijing Datum Technology Development Co., Ltd, Beijing Huaxiashanchuan

Ecological Environment Technology Co., Ltd, and Shenyang JAZZ Technology Co., Ltd.

### ISTRO 2024. 22nd Conference “Living Roots, Living Soils”



Date: September 23rd – 27th, 2024

Location: Virginia Beach VA, USA (Wyndham Virginia Beach Oceanfront Resort)

Read more: <https://www.arec.vaes.vt.edu/arec/eastern-shore/istro-2024-22nd-conference.html>

The theme of ISTRO (International Soil and Tillage Research Organization) 2024 is ‘Living Roots, Living Soils’ and focuses on regenerative agriculture, soil health, cover crops, residue systems and sustainable agricultural production as a whole.

Mark S. Reiter, H el ene B. Doughty, John Mason and Belinda Sterling wrote this message to describe Istro 2024 and invite interested parties to learn more on the conference website:

*“Dear ISTRO 2024 Attendees,*

*We want to extend our heartfelt thanks to each of you for attending the ISTRO Conference in Virginia Beach, Virginia, USA. Your participation and enthusiasm made this event a memorable experience for everyone involved.*

*We invite you to view the video story highlighting the conference, the abstract proceedings book, and our photo gallery.*

*These resources are a way to relive the experience and share it with colleagues who could not attend.*

*We are grateful to connect with so many dedicated professionals who share a passion for our field. Thank you once again for being part of this wonderful gathering. We look forward to seeing you at future conferences!”*

### Global Symposium on Soil Information and Data – FAO GSID24



Date: September 25th – 28th, 2024

Location: Nanjing, China & Hybrid event

Read more: <https://www.fao.org/global-soil-partnership/gsid24/en/>

The Global Symposium on Soil Information & Data (GSID24), co-organized by the Food and Agriculture Organization, its Global Soil Partnership and the Institute of Soil Science, Chinese Academy of Sciences (ISSCAS) was held in Nanjing, China, September 25-28, 2024.

This symposium was an international forum for stakeholders, encompassing policymakers, researchers, and practitioners, to explore the important role of comparable and reliable soil data and information in addressing global challenges such as food security, climate change, and sustainable soil management.

Emphasizing the significance of data-driven decision-making, GSID24 aimed to catalyse the development and implementation of policies grounded in robust soil data, thereby enhancing the efficacy of global efforts towards sustainable development and climate resilience.

The GSID24 with 500 on-site participants and over 2000 virtual attendees, brought together global soil experts, policy markers and stakeholders to:

- leverage expertise;
- share experience;
- forge partnerships;
- driving the global soil agenda forward.

Highlights included: 4 opening remarks from high-level speakers, 27 keynote presentations by leading scientists, 289 abstracts presented through 6 parallel sessions on soil data harmonization, soil mapping and monitoring, soil data-driven decision-making and open data and a field visit to advanced research platforms and sustainable farming sites. Participants agreed that soil data and information are far more than numbers they are the foundation of our agrifood systems. Thank you to everyone for making this symposium a success.

### Science and Innovation Forum (SIF 2024)



Date: October 14th -18th, 2024

Location: FAO headquarters and online

Read more: Science & Innovation Forum 2024 (fao.org)

The Science and Innovation Forum (SIF 2024), one of the three pillars of the World Food Forum 2024, together with the Global Youth Forum and the Investment Forum, on how to make cutting-edge technologies available to small-scale producers, took place in Rome at the headquarters of the Food and Agriculture Organization of the United Nations (FAO).

The third edition of SIF was held under the theme Inclusive Science and Innovation for Agrifood Systems Transformation, Leaving No One Behind. It brought together recognised scientists, innovation experts, and policymakers, as well as small-scale producers, Indigenous Peoples, women, youth, and the private sector, in a bid to encourage a diversity of perspectives based on science.

“Science, technology, and innovation are key accelerators of agrifood systems transformation, but they must be inclusive to ensure that the transition is just and equitable,” FAO Director-General QU Dongyu said in his opening address to the forum.

As the world’s agrifood systems face growing challenges—including the climate crisis, biodiversity loss, resource degradation, population growth, and changing diets—the potential of new technologies should be harnessed for developing solutions.

However, what is needed is to make these innovations impactful on a broader scale - so that all share the benefits equally and sustainably.

The forum also aimed to facilitate inclusive debate and showcase how science and innovation can be leveraged to transform agrifood systems. In Friday’s closing session, for instance, Costa Rica’s Agricultural Minister, Victor Carvajal Porras, offered insights about the real-world impact of inclusive agrifood innovations in his country.

We talked about:

- Gene editing and examined their implications, including risks, for small-scale producers. It also provided a platform to discuss regulatory and policy considerations.
- Artificial Intelligence (AI), which brought to-

gether diverse perspectives and allowed participants to explore how this technology can shape the future of agrifood systems.

- Reports launched, SIF 2024 also saw the launch of two reports: the WFF Young Scientists Group (YSG) report, named Digital technologies for multi-dimensional youth engagement in agrifood systems transformation, and a foresight report named Shaping sustainable agrifood futures: pre-emerging and emerging technologies and innovations for impact. It also witnessed the launch of the Programme on Accelerator Mentorship for Women-led SMEs in Africa, a component of the jointly-led FAO-International Agri-Food Network (IAFN) initiative: Accelerator Mentorship Programme for Women-led SMEs in Africa.

### **8th International Symposium on Biofumigation, green manures and cover crops**



Date: October 21st – 25th, 2024

Location: San Pedro (BA), Argentina

Read more: <https://biofumigacion.ar/en/home/>  
<https://biofumigacion.ar/en/a-network-of-specialists-from-around-the-world-for-soil-and-crop-health/>

The International Symposium on Biofumigation, Green Manure, and Cover Crops was held over three intense days from San Pedro, Buenos Aires Province, and broadcasted to the world.

There were 135 participants, both in-person and virtual, from 13 countries and 4 continents. Participants came from 12 provinces across Argentina, with spaces specially prepared to combine the latest scientific developments since the last symposium with intense exchange. The event started to be planned during the pandemic, months after the previous edition in Switzerland had to adjust to the unexpected challenges posed by COVID-19. From the outset, the Argentine edition was designed to be hybrid and bilingual, to broaden diversity in a

Spanish-speaking country.

Each day featured two keynote speeches and a dozen oral presentations spread over the three days, which included intense Q&A sessions in both English and Spanish. There were also 72 posters published on the virtual platform, with some attendees bringing physical copies, discussed in four sessions. This was significant scientific output for a technology that continues to generate interesting innovations to contribute to sustainable intensification.

The opening session was attended by officials from the Province of Buenos Aires, the Municipality of San Pedro, INTA (National Agricultural Technology Institute), and Agrupación Mallorca, the institution that provided the venue for the event, creating an ideal atmosphere for meaningful exchanges.

Speakers came from Argentina, Spain, Italy, the Netherlands, the United States, and the United Kingdom, with contributions from Switzerland, Uruguay, Mexico, and Australia in the organization, and participants from Brazil, Chile, and Colombia.

On the second day, there was a technical tour of significant fruit and vegetable companies in the region, showcasing the implementation of these technologies to solve challenges such as maintaining the quality of sweet potatoes for export and enriching peach orchard soils. There was also a visit to the INTA San Pedro trials, which have over 20 years of history and impressive results.

A moment was set aside to recognize the three best posters and the three best oral presentations as a motivational exercise for the presenters. The event concluded by announcing that the next edition will be held in California. Previous editions took place in Switzerland, South Africa, the United Kingdom, Canada, Australia, and the United States.

In the closing remarks, some reflections from the organizers and members of the scientific committee were shared:

- Laura Hansen, Director of INTA San Pedro Experimental Station:  
"We are left with a great challenge: to think about how we continue promoting these practices and improving the adoption of these more sustainable and environmentally friendly

practices by producers."

- Mariel Mitidieri, President of the Organizing

**Committee:**

*"We are facing a complexity and a wealth of knowledge that we need to learn to integrate. One of the beautiful memories I take with me is what the people from Uruguay said, that they were waiting to come to the symposium to plan their new experiments. This symposium has opened our minds to everyone."*

- Roberto Matteo, Researcher from Italy:  
"What I value most is this collaboration and the good health of it. Now we have to keep moving forward, going further, and seeing what happens."
    - Julie Finnigan, Researcher from Australia:  
"We learned so much from the presentations, from the international exchanges, and we really must pre-serve the interactions we have established here."
    - Matt Back, Researcher from the United Kingdom:  
"The beauty of these meetings and traveling to other countries is that there is always something new. For future event organizers, I think they should take this symposium as an example, with visits to fields and first-hand experiences."
      - Dale Gies, Producer from the United States:  
"I have attended all the symposiums, and I think this is one of the best. I really hope the interaction between researchers and industries continues at events like this, which bring together different people to share their experiences with biofumigation from around the world."
      - Miguel De Cara, Researcher from Spain:  
"What I take away from here is the people, how we are all on the same boat, and we will remain on the same boat, even in California. Without knowing each other beforehand, we were already working on the same goal: promoting healthy food for people."
      - Giampiero Patalano, Researcher from Italy:  
"I learned so much, and the interaction between researchers and people like me, who work in the field and production with the goal of achieving more sustainable agriculture, has enriched me with a lot of new knowledge."
- The event's social media channels captured hundreds of moments and perspectives created during the symposium. The digital platform also remains active for participants to revisit what

was shared and to inspire new ideas.

### **Keynotes**

Peter-Jan Jongenelen (Netherlands) Research in cover crop mixes and soil biodiversity, particularly plant pathogens.

Miguel De Cara (Spain). Biosolarization for the Agroecological Transition of Protected Crops

Giampiero Patalano & Roberto Matteo (Italy) Biofumigant meals/liquids – innovative applications for biofumigation

Luis Wall (Argentina) Soil microbiome and its interaction with biofumigation, green manure and cover crops

Matt Back (England) Potato cyst nematode management using biofumigants

Dale Gies (USA) Practical applications of biofumigation in farming.

### **Best voted oral expositions**

#### *First place:*

Effect of biofumigation with Brassica spp. on shaping the microbiota of cultivated soil Efecto de la biofumigación con Brassica spp. en la conformación de la microbiota de suelo cultivado | Infantino A., Patalano G., Bergamaschi V., Orzali L., Valente M.T., Pirone L., Haegi A., A. & Grottoli A. Speak-er/Expositor: Alessandro Infantino.

#### *Shared second place:*

Alternative carbon sources for anaerobic soil disinfestation in California strawberry Fuentes alternativas de carbono para la desinfección anaeróbica del suelo en frutillas de California | Daugovich, O. Speak-er/Expositor: Oleg Daugovich.

Influence of different green manures on soil respiration in Mediterranean greenhouses. Influencia de diferentes abonos verdes en la respiración de suelos en invernadero mediterráneo | Fernández-López V., Marín-Guirao J.I., Cara-Rodríguez F.J., Arrescurrenaga D., Peiró-Peiró F. y de Cara-García M. Speaker/Expositor: Ignacio Marín Guirao  
Three best voted posters

First place: Cultivos de cobertura invernales para disminuir el uso de herbicidas en sistemas agrícolas extensivos : Winter cover crops to reduce herbicide use in extensive agricultural systems | Buratovich, M.V., & Acciaresi, H.A.

Second place: Cultivos de cobertura y su incidencia sobre la demografía de Conyza bonariensis y los flujos de emergencia de otras malezas : Cover crops and their effects on Conyza bonariensis demogra-

phy and other weed emergence flows| Buratovich, M. V., & Acciaresi, H. A.

Third place: Recuperación de la salud del suelo en sistemas hortícolas de Uruguay : Recovery of soil health in Uruguayan horticultural systems | Hernández-Mazzini, F., Reggio, A., Silvera, M., Álvarez, A.L., & Leoni, C.

Photo gallery, day by day

Instagram <https://www.instagram.com/symposiumbiofumigation/>

Facebook <https://web.facebook.com/symposiumbiofumigation>

### **International Conference: Impacts of Soil Amendments on Dryland Agro-Ecosystems (ISADAE 2024)**



Date: October 28th – 30th, 2024

Location: Reims, France

Read more: International Conference on The Impact of Soil Amendments on Dryland Agro-Ecosystems – Sciencesconf.org

The International Conference on the Impacts of Soil Amendments on Dryland Agro-Ecosystems took place on 28-30 October 2024 in at the University of Reims Champagne-Ardenne, Reims, France.

More than 100 attendees joined the conference from 33 countries.

### **Budapest Soil Health Forum**



Date: December 4th, 2024

Location: Budapest, Hungary

Read more: <https://www.soilhealthforum.hu/>

### **International Soil and Water Forum 2024**

Date: December 9th – 11 th, 2024

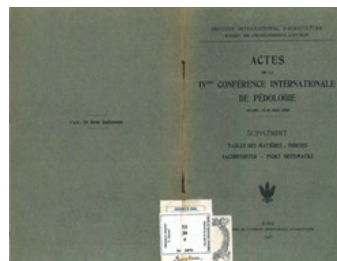
Location: Bangkok, Thailand (Hybrid Event)

Read more: International Soil and Water Forum

The “Ministerial Declaration on managing water scarcity and reversing soil degradation for sustainable and resilient agrifood systems” was endorsed by ministers and representatives from 27 countries attending the International Soil and Water Forum 2024, co-organized by the Food and Agriculture Organization of the United Nations (FAO) and the Royal Thai Government in Bangkok, Kingdom of Thailand, from 9 to 11 December 2024. It reaffirms the collective commitment to urgent action to address water scarcity and reverse soil degradation to accelerate the transformation to more efficient, inclusive, resilient and sustainable agrifood systems.

## New Publications

### Proceedings of the Fourth International Conference of Pedology



The proceedings of the Fourth International Conference of Pedology held in Rome in 1924 are now published and freely available for everybody.

The conference proceedings were published by the International Institute of Agriculture (IIA) in Rome and were intended to serve as a milestone in the advancement of soil science, producing three volumes and one annex for a total of around 2,000 pages. Besides the report of the general secretary, the Proceedings are organized into three sections:

- i) Summaries of communications
- ii) Illustrative notes regarding the soil excursions
- iii) Conferences, notes, and communications to be included in the Proceedings

“They serve as a valuable resource for researchers, academics, and practitioners seeking to understand the historical development and evolution of soil science”.

Read more: <https://www.iuss.org/1924-proceedings-of-the-fourth-international-conference-of-pedology/>

### Australian Soil and Land Survey Field Handbook



By: National Committee on Soil and Terrain, Publisher: CSIRO Publishing  
This fourth edition specifies methods, standards and terminology for soil and land surveys. It is widely used throughout Australia, providing the official source of definitions and codes for the characterization of landform, vegetation, land surface, soil and substrate.

Paper back: December 2024

ISBN: 9781486317660, 228 pages

Read more: <https://www.publish.csiro.au/ebook/download/pdf/8129>

## The state of soils in Europe – Fully evidenced, spatially organised assessment of the pressures driving soil degradation



European Union, 2024.

By: Akca E., Aldrian U., Alewell C. et al; European Commission: European Environment Agency, Joint Research Centre, Arias-Navarro, C., Baritz, R. and Jones, A., Arias-Navarro, C.(editor), Baritz, R.(editor) and Jones, A.(editor), Publications Office of the European Union, 2024.

This report investigates the intricate interplay between drivers of changes in soil health and pressures and impacts on soil in the 32 European Environment Agency (EEA) member countries, along with six co-operating countries from the West Balkans, Ukraine and UK, shedding light on the multifaceted challenges facing soil conservation efforts. Our analysis shows the complex interactions among various factors, both anthropogenic and natural, shaping soil degradation processes and their subsequent consequences. We highlight key findings, including the significant impacts of soil degradation on agriculture, ecosystem resilience, water quality, biodiversity, and human health, underscoring the urgent need for comprehensive soil management strategies. Moreover, our examination of citizen science initiatives underlines the importance of engaging the public in soil monitoring and conservation efforts. This work emphasizes the policy relevance of promoting sustainable soil governance frameworks, supported by research, innovation, and robust soil monitoring schemes, to safeguard soil health and ensure the long-term resilience of eco-systems.

ISSN: 1831-9424 (online), 1018-5593 (print)

ISBN: 978-92-68-20816-8 (online), 978-92-68-20817-5 (print)

DOI: 10.2760/7007291 (online), 10.2760/5897030 (print)

Read more: <https://data.europa.eu/>

doi/10.2760/7007291

## Cultivating sustainability: the role of European Food Systems in advancing the SDGs

By: Borchardt, S., Barbero Vignola, G., Listorti, G., Fronza, V., Guerrieri, V., Acs, S., Buscaglia, D., Maroni, M. and Marelli, L., Publications Office of the European Union, Luxembourg, 2024.



EU food systems resemble complex webs of relationships spanning supply chains, consumption patterns, ecosystems, human health, and planetary boundaries and demand systemic approaches for fostering a transition towards more sustainable outcomes. The Farm to Fork Strategy outlines a vision for such a transition to align healthy societies with a healthy planet, presenting an integrated pathway for advancing the Sustainable Development Goals. However, the complexity emerging from the interactions inside those systems hamper a clear understanding of what should constitute sustainable EU food systems, and which SDGs are addressed by them. This report identifies key sustainability elements in food system conceptualizations, including environmental, economic, social, and governance aspects. These elements are then linked to the SDGs to demonstrate how sustainable food systems can advance them in an integrated manner. The current state of progress on food system-related SDGs is discussed, highlighting challenges and opportunities. The report further contextualizes relevant SDG interlinkages to shed light on the dynamic interactions that drive system behavior. Findings highlight food systems' potential to address multiple SDGs directly (notably SDG 2, 3, 6, 8, 12, 13, 15, and 17) and the entire 2030 Agenda through SDG interlinkages. This report details the complexities, challenges, and pathways towards achieving a sustainable, inclusive, and resilient food system aligned with the 2030 Agenda for Sustainable Development.

DOI: 10.2760/5043740

ISBN: 978-92-68-20814-4 (online)

ISSN: 1831-9424 (online)

Read more: <https://publications.jrc.ec.europa.eu/repository/handle/JRC137661>

## British Society of Soil Science: Protecting Science in Times of Crisis



This document addresses the urgent need for a new approach to safeguard science and its practitioners during global crises. With many conflicts spread over vast geographical zones; increasing extreme weather events due to climate change; and natural hazards such as earthquakes in unprepared regions, this new report takes stock of what we

have learned in recent years from our collective efforts to protect scientists and scientific institutions during times of crisis.

DOI: 10.24948/2024.01

Read More: <https://council.science/publications/protecting-science-in-times-of-crisis>

### **British Society of Soil Science: annual Report 2023**



The Annual Report of the BSSS Society sets out considerable achievements against, of its initiatives, spanning professional support for members, enhanced UK and international policy maker engagement, and outreach activities with non-members and the public.

Read More: [BSSS\\_Annual-Report-2023\\_final\\_Digital.pdf](#) (soils.org.uk)

### **Programme Design for Transformations to Sustainability Research: A comparative analysis of the design of two research programmes on transformations to sustainability.**



International Science Council (ISC) | Published by the International Science Council ©, the Belmont Forum and NORFACE, under Creative Commons Licence CC BY-NC 4.0.

By: Mukute, M., Colvin, J. and Burt, J. 2024.

DOI: 10.24948/2024.02

Download: [ISC-T2SReports-ProgrammeDesign.pdf](#) (council.science)

Read more: URL: [https://council.science/wp-content/uploads/2024/04/T2SReports\\_Pro-gramme-Design.pdf](https://council.science/wp-content/uploads/2024/04/T2SReports_Pro-gramme-Design.pdf)

### **Social Transformations to Sustainability through a Critical Lens: Integrative insights from twelve research projects funded under the Transformations to Sustainability research programme (2018–2022).**



International Science Council (ISC) | Published by the International Science Council ©, the Belmont Forum and NORFACE, under Creative Commons Licence CC BY-NC 4.0.

By: Susanne C. Moser, 2024

DOI: 10.24948/2024.03

Read More: [ISC-T2SReports-Synthesis.pdf](#) (council.science)

### **Global environmental change International Science Council (ISC)**



By: Moser, S. 2024a.

This report focuses on insights into transformations to sustainability yielded by the three projects funded under T2S1. 10.24948/2024.04

Transformative Labour: The Hidden (and Not-So-Hidden) Work of Transformations to Sustainability. Integrative Insights from Three Transformative Knowledge Networks.

DOI: <https://doi.org/10.1016/j.gloenvcha.2024.102888>

Read more: Transformative labor: The hidden (and not-so-hidden) work of transformations to sustainability – ScienceDirect

## International Science Council (ISC) ISC\_ Annual Report 2023



The International Science Council (ISC) released its 2023 Annual Report 'A year of transformation and global impact', highlighting a year of transformative achievements setting the stage for future success. Download: [ISC\\_AnnualReport\\_2023.pdf](#) (council.science)

Read more: <https://council.science/news/iscs-2023-annual-report-a-year-of-transformation-and-global-impact/>

### International Science Council (ISC) **FROM SCIENCE TO ACTION: leveraging scientific knowledge and solutions for advancing sustainable and resilient development**



ISC and the World Federation of Engineering Organizations (WFEO) – as coordinators of the Scientific and Technological Community Major Group – released a position paper bringing together the latest scientific evidence and thinking from the scientific, engineering and technological community, highlighting policy-relevant and evidence-based insights to accelerate SDG progress. The paper is structured in five key themes supported by case studies demonstrating 'science in action'. From science to action: Leveraging scientific knowledge and solutions for advancing sustainable and resilient development. Position paper from the Scientific and Technological Community Major Group for the 2024 High-level Political Forum.

Download: <https://council.science/wp-content/uploads/2024/07/HLPF-2024-compressed.pdf>

Read more: <https://council.science/publications/from-science-to-action-hlpf2024/>

## In Memoriam

### Dominique Arrouays



Dominique graduated as an Engineer in Agricultural Techniques from the École Nationale d'Ingénieurs des Travaux Agricoles in Bordeaux and earned a Doctorate in Agronomy from the École Nationale Supérieure Agronomique in Montpellier. He began his career at INRA (now INRAE) as a Research Engineer in 1983 and later served as Director of INRA's InfoSol unit from 2000 to 2011, overseeing soil mapping across France. A visionary in soil science, Dominique devised and coordinated the French Soil Quality Measurement Network (RMQS), a groundbreaking soil monitoring system. Through RMQS, 13,000 detailed soil samples were collected and analysed, offering insights into the nation's soil texture, structure, nutrient levels, microbes, and pollutants.

Dominique's research focused on carbon storage in agricultural soils, particularly as a tool to mitigate greenhouse gas emissions in the context of the Kyoto Protocol. His thesis on soil carbon earned him the Silver Medal of the Académie d'Agriculture in 1994, and the Gold Medal of the Academy in 2014. He received the Medal of the National Order of Agricultural Merit from the French Agricultural Ministry.

This expertise positioned him as a key contributor to the Intergovernmental Panel on Climate Change (IPCC), which received the Nobel Peace Prize in 2007.

Together with Jérôme Balesdent, they led to the formulation of the "4 per 1000" idea, underscoring the critical role of soil carbon in addressing global climate challenges.

From 2013 to 2015, Dominique served as President of the French Soil Science Association (AFES). He is active in the IUSS and contributes the advancement in pedometrics and digital soil mapping. He coordinated and chaired the Working Group on GlobalSoilMap, advancing global soil data initiatives. He is the coauthor of Best Pedometrics Paper in 2009, 2010, and 2019.

He was also a member of the FAO Intergovernmental Technical Group on Soils. As Editor-in-Chief of the journal *Étude et Gestion des Sols*, Dominique

made significant contributions to soil science communication.

A world-renowned expert on soils and their connection to major planetary issues, Dominique's legacy continues to shape soil science and how we map soil for sustainable land management practices worldwide.

The IUSS Pedometrics Commission and Working Groups on Digital Soil Mapping and GlobalSoilMap are paying a tribute to Dominique.

Dominique was a remarkable colleague and an inspiration to countless individuals worldwide. His groundbreaking work in soil mapping set new standards for the entire scientific community. For many years, he dedicated his life to mapping and protecting our planet's soils.

Amongst his numerous contributions to soil science, his visionary leadership was instrumental in advancing the GlobalSoilMap initiative and its specifications. The initiative lays the foundation for numerous national and global projects. Through his unique ability to foster collaboration across disciplines, institutions, and borders, he had a unique talent to unite and inspire his peers to work together. His approach cultivated a spirit of cooperation that transcended traditional boundaries, one that drove GlobalSoilMap's success on a global scale.

Beyond his scientific contributions, Dominique was a kind, open-minded, and well-respected colleague. His discussions were always insightful and enriched by his vast experience and knowledge. Many of us also cherished his good sense of humor, his witty jokes, and his memorable singing performances at various conferences.

Dominique's legacy will continue to inspire generations to come. We will deeply miss him, both as a scientist and as a friend.

WG Digital Soil Mapping and GlobalSoilMap  
Laura Poggio, Alessandro Samuel Rosa, Pierre Roudier

Tributes to Dominique Arrouays

J'écris en tant que collègue pédologue, honoré d'avoir travaillé aux côtés de Dominique dans les communautés GlobalSoilMap et Pedometrics.

Dominique était non seulement un pédologue brillant et accompli, mais aussi un véritable internationaliste dont l'intellect, la perspicacité et la vision transcendaient les frontières. C'était un penseur

d'une rare profondeur, un sage dont la sagesse éclairait le chemin pour les autres et un devin dont la clairvoyance a façonné l'avenir de notre discipline. Il était aussi un artiste dont la présence apportait chaleur et joie à tous ceux qui avaient le privilège de le connaître.

Ses contributions à la science du sol ont été immenses et transformatrices, laissant une marque indélébile dans notre domaine. Sa perte est profondément ressentie et il manquera profondément à tous ses amis et collègues. Notre discipline est affaiblie par son décès, mais son héritage continuera de nous inspirer et de nous guider dans les années à venir.

Alex McBratney

Dominique leaves an amazing legacy behind, and his family can all be very proud of him. Personally, I am grateful to have learned so much from him, he was an inspirational mentor and great colleague.

Titia Mulder

Domi was not only a respected supervisor but also a cherished friend. As an extraordinary pioneer of GlobalSoilMap, he will be remembered for his remarkable contributions to Pedometrics. May he rest in peace, with his brilliance and passion continuing to inspire us all.

Songchao Chen

I am privileged to have known Dominique, a fellow scientist and a dear friend. Dominique was a man of extraordinary intellect, always sharp and critical thinking, and forward-looking in his vision. He has a combination of analytical rigour and creative ingenuity.

I have the privilege of working with him on soil carbon, analysing soil texture data, to defining soil. Dominique approached every challenge with clarity, insight, and a drive to make a difference.

You are the champion, my friend.

Budiman Minasny

Deep condolences from the Brazilian Soil Science Society (SBSCS) to family and friends. It is a great loss for soil science and specially for pedometric scientists.

Lúcia Anjos

Dominique was well known and respected among the pedometricians in Russia. I personally had a privilege to work together with him in ITPS of Global Soil Partnership. We send our condolences to his

relatives, friends and colleagues.  
Pavel Krasilnikov

Dominique leaves behind a significant scientific legacy, as well as a lasting impact on young scientists whom he supported, encouraged, and inspired. It was a true honor to work alongside him and witness a brilliant scientist approach soil science with such creativity, rigor, and profound knowledge of the field. His relentless curiosity, passion, and the rare and remarkable ability to inspire those around him set him apart as both a leader and an innovator.  
Alexandre Wadoux

Domi's death shook me. We worked together on many projects to develop and promote DSM in France and beyond. His legacy is immense and goes far beyond pedometric. He will remain in our minds and hearts for a long time to come. And what's more, he was so funny...  
Philippe Lagacherie

Dominique was a true friend. Very kind and persons oriented. Brought many people together, for advancing soil science and setting agendas but also for having fun. He'll be dearly missed.  
Johan Leenaars

I am very grateful to have been able to visit Dominique and his team on many occasions over the years. Dominique always ensured that these trips were not only interesting, productive, and impactful but also that they were highly enjoyable. Through his undoubted expertise in soil science, his enthusiasm to adopt novel quantitative methodologies and his exceptional charisma, he was able to attract many talented scientists to Orleans and created a highly stimulating working environment. He also gave generously of his time outside working hours and was at the centre of many entertaining evenings out. I will greatly miss Dominique's help professionally, and more importantly, his friendship.  
Ben Marchant

I had the pleasure of working with Dominique on several pedometrics-related projects. He was an outstanding soil scientist and pedometrician who sparked many groundbreaking ideas and left a lasting mark on our field. But more than that, he was a kind, generous, passionate and warm person who made it so easy to form a friendship. We will miss him deeply, both for his remarkable contributions to the field and for the wonderful person he was.

Gerard Heuvelink

I have very fond memories of my time at INRA and was very grateful to Dominique for giving me that opportunity. I especially remember his entertaining at pots and InfoSol gatherings which was really something to see! And his ability to quickly knock up a section of discussion or intro for a paper, he really helped me a lot. He will be greatly missed and remembered.  
Thomas Orton

Please visit the following site to add your tribute to Dominique: <https://www.forevermissed.com/dominique-arrouays/about>

### **Kazutake Kyuma (1931-2024)**



Dr. Kazutake Kyuma, Honorary Member of the IUSS, passed away on 4th November 2024 at the age of 93 in Osaka, Japan. He was born in 1931 in Pyeongannam-do, which was part of Japan at the time and is now part of the Democratic People's Republic of Korea, and obtained Bachelor of Agriculture in 1954, Master of Agriculture in 1957, and Doctor of Agriculture in 1961 from Kyoto University, Japan. He served as an assistant professor, associate professor, and professor in the Faculty of Agriculture and the Center for Southeast Asian Studies, Kyoto University, from 1960 through 1994 and as a professor in the School of Environmental Science, the University of Shiga Prefecture, Japan, from 1994 through 2001. He was also engaged in research as a visiting scientist in North Carolina State University, USA, from 1963 through 1964 and taught as a visiting professor in Kasetsart University, Thailand, from 2002 through 2004.

He devoted himself until the very final days of his life to research and education in soil science, particularly in the fields of soil chemistry, soil genesis and classification, soil fertility evaluation, nutrient cycling in soil ecosystems for establishing sustainable agriculture under different environmental conditions in the globe. Two of his most notable contributions include "fertility evaluation of lowland soils in Tropical Asia" and "ecosystem study of shifting cultivation in Monsoon Asia" can be recog-

nized as milestone research in the development of agricultural sciences in the tropics and contributed to understanding soils, agriculture, peoples, history, culture and philosophy of that area. One of his publications "Paddy Soil Science" (Kyoto University Press, Kyoto, and Trans Pacific Press, Melbourne, 2004) could be recognized as the Bible for those who are and will be engaged in research, education and extension of paddy soil science as well as rice-based agriculture not only in the Tropical Asia but everywhere in the world.

Dr. Kyuma not only contributed to academic achievement in soil sciences in a global context mentioned above but also made a great effort for managing and organizing international activities convened under ISSS/IUSS and its regional sector, i.e. East and Southeast Asia Federation of Soil Science Societies (ESAFS). He dedicated himself to the success of the 14th ICSS in Kyoto, Japan, in 1990 as Vice-chair of Soil Genesis and Classification Division of ISSS as well as Chair of Program Committee of the Organizing Committee of that congress. In that congress, he became a great promoter to establish ESAFS and then the first President to hold the 1st ESAFS International Symposium in 1991 at Osaka, Japan, and continued to support it until today. He also worked as a member of Board of Trustees in IRRI for directing research projects under CGIAR scheme and as a member of Editorial Board of *Geoderma* for improving and controlling the quality of scientific reports as well as broadcasting the valuable outcomes of a variety of soils research from all over the world and was elected as Honorary Member of the IUSS in 2008. He additionally served as President of the Japanese Society of Soil Science and Plant Nutrition (1990-1991), President of the Japanese Society of Pedology (1986-1990) and a member of the Science Council of Japan (1988-2000).

He received numerous prestigious awards, including Japanese Agricultural Science Award (1985), Award of Japanese Society of Soil Science and Plant Nutrition (1975), Award of Japanese Society for Tropical Agriculture (1978) and became the first winner of ESAFS Award (2007). He was also honored with Purple Ribbon Medal (1994) and Cordon of the Order of the Sacred Treasure (2002) of the Government of Japan for his dedication to research and education in soil sciences, particularly those for the development of the countries in the tropics.

Dr. Kyuma is survived by his daughter, Kaori, and his son, Ken, together with their family members living in Osaka and Kyoto, Japan. His dearest wife

Kazuko preceded him in death. He will be greatly missed not only by the above but those who spent some time, days or decades, together with him, particularly his colleagues, past-students, co-workers, collaborators, friends and others distributed all over the globe.

Prof. Dr. Takashi Kosaki  
Ex-President, Honorary Member, IUSS  
Ex-Chair, IUSS Subcommittee, Science Council of Japan

Prof. Dr. Kazuyuki Inubushi  
Honorary Member, IUSS  
Chair, IUSS Subcommittee, Science Council of Japan  
Ex-President, Japanese Society of Soil Science and Plant Nutrition