

COMMISSION 1.1

# SOIL MORPHOLOGY & MICROMORPHOLOGY



**International Union of Soil Sciences**

**NEWSLETTER APRIL 2021, Vol. 27-28**

Newsletter prepared by Commission 1.1 Officers 2018-2022

Chair: **Fabio Terribile** (Italy) - [fabio.terribile@unina.it](mailto:fabio.terribile@unina.it)

Vice-Chair: **Richard J. Heck** (Canada) - [rheck@uoguelph.ca](mailto:rheck@uoguelph.ca)

Layout and design: CRISP

Cover: Soil macroinvertebrate activity unveiled by means of X-ray microCT (Courtesy of Laura Gargiulo & Giacomo Mele - CNR ISAFOM, Napoli).

Comm. 1.1. Soil Morphology and Micromorphology - IUSS

## TABLE OF CONTENT

LETTERS FROM COMMISSION OFFICERS .....	4
PILLS OF WISDOM for soils and soil scientists.....	5
ANNOUCEMENT FROM THE ICOSM ORGANISING COMMITTEE .....	8
NEW ACTIVITES BY THE COMMISSION .....	9
FORTHCOMING MEETINGS .....	16
REPORT ON PAST MEETINGS .....	17
AWARDS IN SOIL MICROMORPHOLOGY.....	18
OTHER AWARDS CONNECTED TO SOIL MICROMORPHOLOGY .....	20
A GRAPHICAL OVERVIEW OF OUR RESEARCH PAPERS.....	21
RESEARCH NOTES, BOOKS AND PUBLICATIONS .....	22
IN MEMORIAM TO JOSÉ AGUILAR RUIZ .....	24

# LETTERS FROM COMMISSION OFFICERS

Dear all,

It is about one year from the previous newsletter. We hope that all of you and your families are fine and safe. Needless to add that COVID 19 has affected our communities and our work. No surprise then, if many of our activities have slow-down and thus also this newsletter. Not many activities have to be reported and thus here we squeezed two newsletters into a single one (newsletter 27-28).

Despite this reduce intensity here, we are happy to report about the 1st virtual soil micromorphology meeting, the results from our first surveys about (i) manufacturers of soil thin sections and (ii) list of places having medium to large collections having of soil thin section. We are also happy to inform that IUSS has accepted our Commission 1.1 proposal applying to IUSS Stimulus Fund for a small financial support for developing a new web site, and that we have award Dr. Jennifer Kielhofer as the new young soil micromorphologist receiving the YMPA prize.

In this issue we shall continue the “pills of wisdom“ section. This time we have an invited contribution from Dr. Marie-Agnes Courty, our prominent soil micromorphologist strongly engaged in archeology. Here, Marie-Agnes describes the importance of high-energy events at the earth surface, thus demonstrating the interdisciplinary value of soil micromorphology.

Good Reading!

Fabio Terribile & Richard Heck  
IUSS Commission Soil Morphology and Micromorphology

## PILLS OF WISDOM for soils and soil scientists

Dear reader, this section of our newsletter is devoted to publish small contributions from some of our major soil scientists, who decided to share with us some of their thoughts on key issues relevant for our Commission. This section is thought to be also open to receive some reactions, comments, suggestions, etc.

In this number we are very pleased to publish the contribution from Marie-Agnes Courty. Dr. Courty is a well-known prominent scientist who devoted major attention to soil micromorphology applied to archeology. She gave a major contribution demonstrating the interdisciplinary value of soil micromorphology.

Then... Marie- Agnes simply thanks !

### MARIE-AGNES COURTY

#### DP CNRS – UPR 8521 PROMES, FRANCE

A soil morphology perspective on the long-term preservation of high-energy events at the earth surface by Marie-Agnes Courty, Research Scientists at CNRS PROMES, France<sup>a</sup>.

The most advanced technologies, for collecting rock and soil samples, were recently launched on the Mars Perseverance Rovers. The very detailed analytical characterization is expected to detect possible signs of past microbial life, from when the Mars surface was a habitable environment, which would have been preserved over time.

This audacious expectation has greatly benefited from the fascinating exploration of the ~3,700-Myr-old Isua dolomites in Greenland, that reported microbial structures in Archaean rocks<sup>b</sup>. The combination of isotope and microfabric analyses have revealed how these biofilm stromatolites formed under extreme conditions in shallow-water environment of the primitive earth surface, and have resisted over time due to metamorphic alteration during deep burial.

The hypothesis for this remarkable organic carbon preservation is supported by <sup>14</sup>C measurements, isotope analyses and activation energy studies<sup>c</sup>. The formation of high-energy, mineral-bound organic carbon was traced in soils, sediments and dissolved compounds, leading to a mineral protection that can persist for millennia. Thus, changes in the energy balance at the earth surface would explain the fluctuating preservation of organic carbon through geological times rather than a selection of biochemically unreactive compounds.

Meanwhile, the unusual preservation of ancient soil surfaces, bearing the nearly intact footprints of atmospheric events or anthropogenic activities remains to be elucidated at the energy level. Their wide occurrence, in all kinds of depositional and soil environments, and in diverse periods along the course of human history, has provided the most pristine archives for reconstructing landscape evolution and habitat formation at the finest temporal and spatial scales. The considerable research effort of quaternary geologists, geoaarchaeologists and archaeologists, on these fascinating past records of human/environment interactions, has somehow trivialized their

---

<sup>a</sup> CNRS UPR 8521 PROMES, Procédés, Matériaux et Energie Solaire, Rambla de la Thermodynamique. Tecnosud, 66100 Perpignan-FR. marie-agnes.courty@promes.cnrs.fr

<sup>b</sup> Nutman, A., Bennett, V., Friend, C. *et al.* Rapid emergence of life shown by discovery of 3,700-million-year-old microbial structures. *Nature* **537**, 535–538 (2016). <https://doi.org/10.1038/nature19355>

<sup>c</sup> Hemingway, J.D., Rothman, D.H., Grant, K.E. *et al.* Mineral protection regulates long-term global preservation of natural organic carbon. *Nature* **570**, 228–231 (2019). <https://doi.org/10.1038/s41586-019-1280-6>

relevance. Thus, at present, most of these miraculous memories are basically perceived as testimony of daily life without even questioning when and why did their preservation occurred, and what it reveals about the possible ancestral cognition of unusual natural events.

Meanwhile, the soil science community has not devoted much attention to these intriguing anthropogenic deposits, simply viewed to have partly escaped pedogenic processes and soil horizon development for unsolved reasons. All present-day soils, showing the continuous transformation of soil surfaces or rapid degradation, by soil forming processes of any type of firing residues, of decayed earthen architecture, mixed with straw or stable dung deposits, have so far failed to provide a modern analogue to the well preserved ancient records.

In soils, phytoliths, seeds, charcoal, ashes, pollens, dung or fat, or any kind of biomass wastes are assumed to rapidly degrade into organo-mineral complexes by decomposer organisms. Their selective preservation is broadly accepted to have occasionally occurred at depth, along with soil horizon development. The possibility of interactions with minerals (i.e. adsorption) or metals in stabilization processes of organic matter is a question of intensive research in the soil science communities. The recalcitrance against biotic or abiotic oxidation, of biochar and pyrogenic organic carbon (PyOM), is deeply investigated and there is at present no consensus concerning the processes involved in their longterm persistence. Thermal and elemental analyses are mostly used to tentatively link the functional groups formed at the PyOM surfaces with their recalcitrance, without taking into account their inherent properties at a microscopic to atomic level<sup>d</sup>. The ongoing research of the soil carbon communities intends to promote their use as a C sequestration tool, but also as a mean to improve the soil quality of conventionally cropped agroecosystems. Even more, elucidating the secret of PyOM C storage over centuries would help to gain a better understanding of the global C cycle, with expected major implications to monitor effects of the ongoing climate warming.

The tremendous potential of soil memories with well-preserved PyOM for elucidating this critical question of long-term C sequestration has so far been timidly exploited by geoaarchaeologists. The increased fascination for soil micromorphology, over the last 20 years, has resulted into a profusion of studies on pyroresidue accumulations in archaeological contexts. The compositional and structural characterization of biomass compounds that is performed from thin sections face the unavoidable constrain of in-depth contamination by mineral resins from the petrochemistry. Alternative multistep 3D morphology analysis of well-preserved soil surfaces with pristine pyroresidues has been successfully tested from intact soils (i.e. not contaminated)<sup>e</sup>. The high resolution control of soil component stability to water and mechanical pressure has permitted the identification of resistant pyroresidues in stable aggregates, and to characterize their surface properties down to the nano-level using an integrated panoply of microscopic techniques.

The geoarchaeological community has so far not been convinced to adopt this 3D integrated morphological approach (3D-IMA) that is more cost-effective and time consuming compared to the routine study of thin sections. In addition, the adjustment of the 3D-IMA to each singular soil archive, particularly in archaeological contexts, is more subtle than a basic description of thin sections and the expected implications are possibly less attractive from an anthropological perspective.

The Soil Morphology and Micromorphology IUSS Commission could actively contribute to building bridges between the organic carbon soil science community and geoaarchaeologists to further elucidate the origin, forming processes and properties of resistant bioresidues. A joint development of the 3D-IMA would help to evaluate the exact relevance of these longlasting remains as biowastes of past anthropogenic activities and at the same time to better predict the

---

<sup>d</sup> Burgeon, V., Fouché, J., Leifeld, J., Chenu, C., & Cornelis, J. T. (2021). Organo-mineral associations largely contribute to the stabilization of century-old pyrogenic organic matter in cropland soils. *Geoderma*, 388, 114841. <https://doi.org/10.1016/j.geoderma.2020.114841>

<sup>e</sup> Courty, M. A. (2017). Fuel origin and firing product preservation in archaeological occupation contexts. *Quaternary International*, 431, 116-130. <http://dx.doi.org/10.1016/j.quaint.2015.12.067>

biowaste heritage we are leaving to future generations. This task force could be achieved through comparative studies of the current perishable memories that rapidly degrade by the soil turnover and the perennial ones that are preserved in ancient soils. In close linkage with the geoscience communities, our commission could also play an active role to open innovative research on the footprints at the soil surface of the recently discovered high energy atmospheric event (HEAE)<sup>f</sup>. These extreme natural phenomena that are occasionally induced during lightning by neutron production from photonuclear reactions are known to have impacted all terrestrial surfaces since the Earth's origin. Elucidating their possible role on the formation of high-energy, mineral-bound organic carbon could reveal some kind of high-energy flash carbon sequestration that would currently occur in the atmosphere and at the ground. A database of soil signatures of HEAE would offer our commission the chance to finely trace effects of external forces versus internal ones on the formation of the imperishable soil memories by high-energy events along the human trajectory, or even during the Archaean, a period of intense cosmic ray bombardment.

---

<sup>f</sup> Diniz, G. S., Ferreira, I. S., Wada, Y., & Enoto, T. (2021). Generation possibility of gamma-ray glows induced by photonuclear reactions. *Journal of Geophysical Research: Atmospheres*, 126(3), e2020JD034101. <https://doi.org/10.1029/2020JD034101>

# ANNOUNCEMENT FROM THE ICOSM ORGANISING COMMITTEE

International Conference on Soil Micromorphology is postponed to 2022

Dear Colleagues,

Due to the current situation related with coronavirus all around the world, the Organizing Committee of the International Conference on Soil Micromorphology (ICoSM), Kraków, Poland, decided to postpone the conference to 2022. The short micromorphological course was also postponed to 2022, as it is strictly connected with the conference.

The new date and program of the conference will be announced in the summer 2021. Now we can say generally that the date of the conference will be organized around September 2022.

Thank you for your previous registration, but we will have to start a new registration once again in the autumn 2021. The participants who paid the conference fee are asked to contact us.

We will keep you informed about our next decisions.

Our website <http://www.icosm2020.sggw.pl/> is still active, but now it is not up-to-date. We will make it up-to-date in the next months.

We still believe that we will meet on a 'real' (not remote) event. Therefore we do not resign from organization of the conference in normal (not online) manner. **Take care of you and hopefully see you in Kraków in 2022!**

Also, we would like to inform that our previous email address [icosm2020@sggw.pl](mailto:icosm2020@sggw.pl) does not work anymore. New email address of the conference is: [icosm2022@sggw.edu.pl](mailto:icosm2022@sggw.edu.pl)

On behalf of the ICoSM Organizing Committee,  
Lukasz Uzarowicz



# NEW ACTIVITIES BY THE COMMISSION

As you know in 2019, we have made a general call asking your collaboration for new Commission 1.1 activities. Eight colleagues confirmed their availability. Then – including the officers - we are about 10 people potentially active on the 10 selected activities<sup>§</sup>:

Below is a short update on things we have managed to perform:

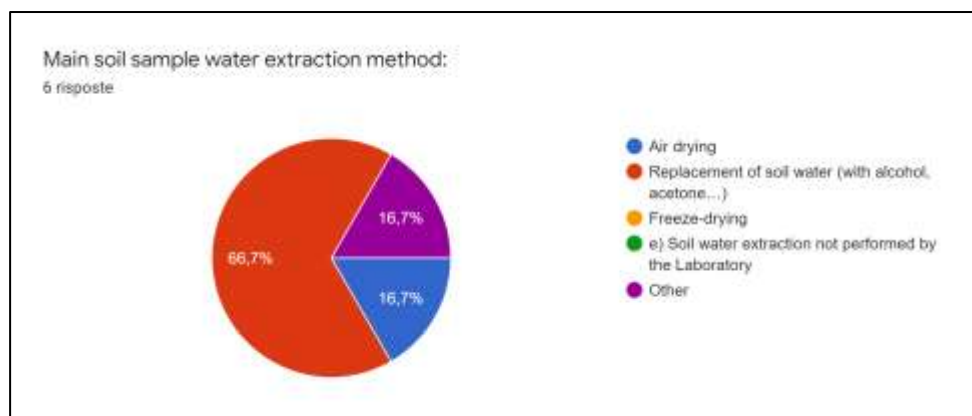
## **Assemble a list of manufacturers of soil thin sections.**

Below the first results obtained by the questionnaire. Currently we have received only 7 answers (one was incomplete) but we believe that we can obtain more. Then please spread the word and continue to fill-in the google form at the same following link.

[https://docs.google.com/forms/d/e/1FAIpQLSdnZY5vLrE1NpxlLTyao\\_pn0wwMSSBOnWTPrbnQiEzS9ihogw/viewform?usp=sf\\_link](https://docs.google.com/forms/d/e/1FAIpQLSdnZY5vLrE1NpxlLTyao_pn0wwMSSBOnWTPrbnQiEzS9ihogw/viewform?usp=sf_link)

Please copy&paste the link on your browser and fill-in the questionnaire (10 minutes job) !

Here we report some figures about key items and in the next table we shall report a synthesis of the answers we had received.



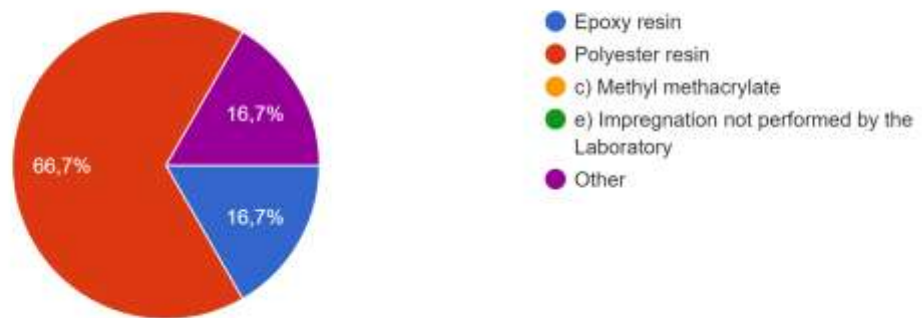
---

<sup>§</sup> List of planned new activities

1. *Revise and support Website, youtube channel, twitter, facebook,*
2. *Produce and update commented list of scientific literature: archeology*
3. *Produce and update commented list of scientific literature: x-ray tomography*
4. *Assemble a list of manufacturers of soil thin sections*
5. *Videoclips (5 minutes) of selected speeches (to be placed on our website) including: (i) achievements in soil micromorphology (chosen on the base of most cited paper) ; (ii) people who have received awards, (iii) emerging issues or opportunities*
6. *Teleconference Round tables – once each semester - (e.g. by Skype, Webex, global.gotomeeting.com) about specific topics in soil micromorphology: soil genesis, archeology, tomography, etc..*
7. *Establish an archive for digital copies of micromorphology publication not readily available through standard digital sources (e.g. WoK, Scopus, etc.). For example proceedings of micromorphology meetings, special project reports, etc*
8. *Create a list of places having large thin section collections, and interact with those places for identifying features to be recorded (e.g. soil type, features, location etc.)*
9. *Reporting about the integrated use of microscopic techniques for various soil applications (carbon sequestration, structure preservation, human and climate impact).*
- 10 *The microphotograph of the month” should be published both in the micromorphology websites and on the newsletter...*

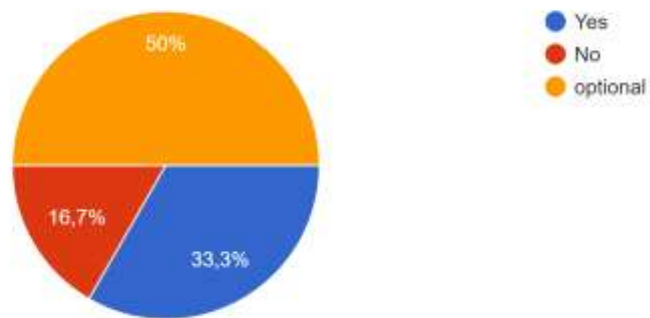
### Main chemicals used for soil sample impregnation/hardening

6 risposte



### Covering the sample with the glass slide

6 risposte



Manufacturer (institution/company/laboratory)	Country (full address – optional)	Contact person (name, e-mail)	Main soil sample water extraction method:	"other" method	Main chemicals for impregnation	Possibility of adding a fluorescent dye to the	Possible size(s) of impregnated samples after cutting (area, cm)	Recommended size(s) of the boxes used for soil sampling	Final size of thin sections (area, cm x cm):	Final thickness of the thin section	Covering the sample with the glass slide	Thin sections delivery to the customer	General pricing information (optional):
Mineralogy & Petrology research unit (Dept. of Geology), Ghent University	Belgium (Krijgslaan 281/S8, 9000 Gent)	Prof. Dr. Johan DE GRAVE, johan.degrave@ugent.be	Replacement of soil water (with alcohol, acetone...)		Polyester resin	yes	28x48; 60x90; 90x120	several options	28x48; 60x90; 90x120	30 microns	Yes	In regular boxes, with additionally protection (polystyrene, bubble wraps, loose fills...)	contact (e-mail) contact-person
PACEA Transfert Sediments & Materials (UMRS199 PACEA Univ. Bordeaux)	France	Pauline Dugas (pauline.dugas@spedera.fr) / Alain Queffelec (alain.queffelec@univ-bordeaux.fr)	Air drying	and replacement by acetone	Polyester resin	No	13 x 6	15 x 10 x 5	13 x 6	30 microns	Yes	In regular boxes, with additionally protection (polystyrene, bubble wraps, loose fills...)	Pricing here: <a href="https://mycore.cloud.net/index.php/s/Gkguz0WxHUpObd">https://mycore.cloud.net/index.php/s/Gkguz0WxHUpObd</a>
University of Leicester, Leicester, UK	University of Leicester, Leicester, UK	ab55@le.ac.uk	Replacement of soil water (with alcohol, acetone...)		Both Polyester and Epoxy	yes	Range of impregnated sample sizes from 2.5 cm diameter up to 20 x 20 x 10 cm (LxWxH). Range of glass slide sizes from 0.46 x 0.26 cm up to 10 x 7.5 cm	I make my own boxes out of sheet metal I buy. Then I make the size of the boxes to suit the sampler/sediment's needs. The last boxes I made were 13 x 8 x 6 (LxWxH) cm.	Range of sizes from the smallest thin section sample area size (1 x 1 cm) up to the largest thin section sample area size (9.5 x 7 cm). Range of glass slide sizes from the smallest glass slide size (0.46 cm x 0.26 cm) up to the largest glass slide size (10 x 7.5 cm). On request I make glass slides into a smaller or different shape to suit particular researcher's needs.	30 microns	optional	In special protective boxes	
Dept. of Earth Sciences, Brock University	Dept. of Earth Sciences, 1812 Sir Isaac Brock Way, St. Catharines, ON L2S 3A1 Canada	Prof. John Menzies, jmenzies@brocku.ca	Replacement of soil water (with alcohol, acetone...)		Epoxy resin	yes	7cm X 5cm	10cm X 8cm	7cm X 5cm but can make larger	30 microns	optional	In regular boxes, with additionally protection (polystyrene, bubble wraps, loose fills...)	<a href="https://brocku.ca/mathematics/earth-sciences/wp-content/uploads/sites/106/Web-petrographic-lab-Jan-2015.pdf">https://brocku.ca/mathematics/earth-sciences/wp-content/uploads/sites/106/Web-petrographic-lab-Jan-2015.pdf</a>
CENIEH	Burgos, Spain	Carlos Salz, carlos.salz@cenieh.es	Other	In Oven, at 30-35 Celsius degrees	Polyester resin	No	68x140 and 60x90		It depends on de sample. Kubiena box is a good option	Other	No	In regular boxes, with additionally protection (polystyrene, bubble wraps, loose fills...)	It depends on the size of the sample, of resin volume used....
Vancouver Petrographics Ltd	8080 Glover Rd, Langley City, BC V1M 3S3, CANADA	vanpetro@vanpetro.com		information on website	information on website		information on website	information on website	information on website				information on website
Sbrana	Italy	Massimo Sbrana via Andrea Costa n7 57025, Piombino LI Italia	Air drying		Epoxy resin		information on website	information on website	20x48mm 44x56mm 55x95mm	30 microns	optional	In regular boxes, with additionally protection (polystyrene, bubble wraps, loose fills...)	contact (e-mail) contact-person

### Create a list of places of collections having a medium-large number of thin section.

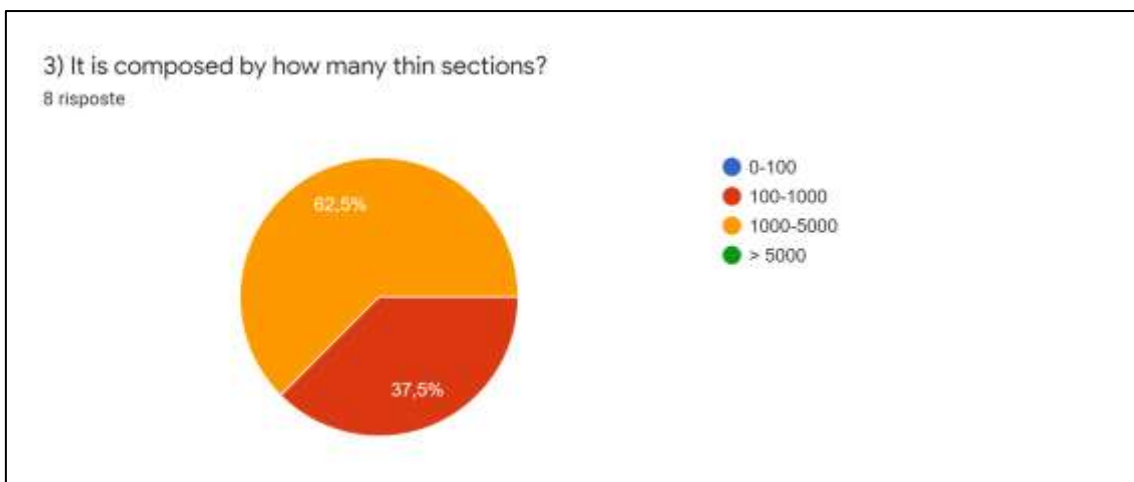
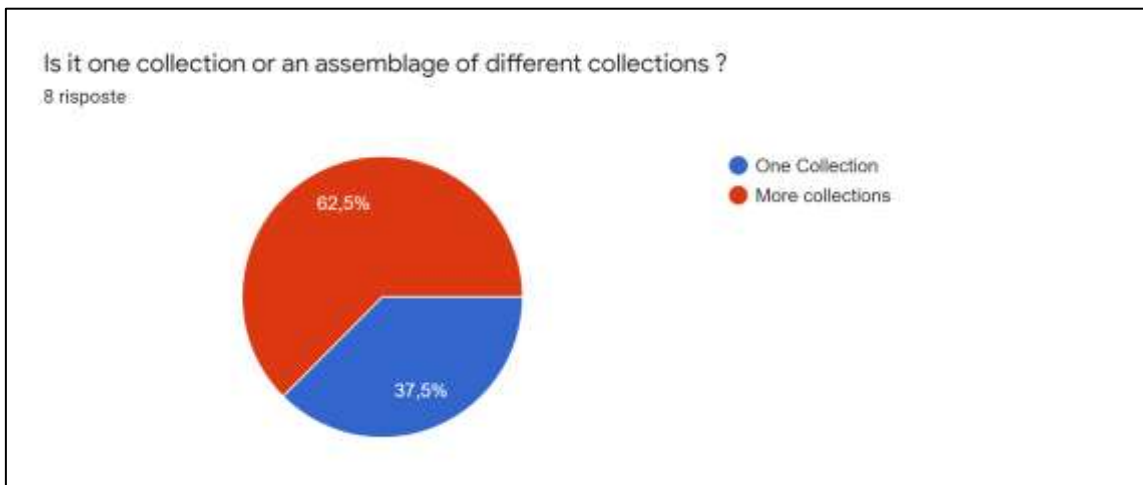
The aim of this activity was to have a first good set of information of collection having a medium-large number of thin section (above 50 thin sections). Our final goals being to create such list and share it with you then to interact with those places (especially those having a large set of thin sections) for identifying features to be recorded (e.g. soil type, features, location etc.).

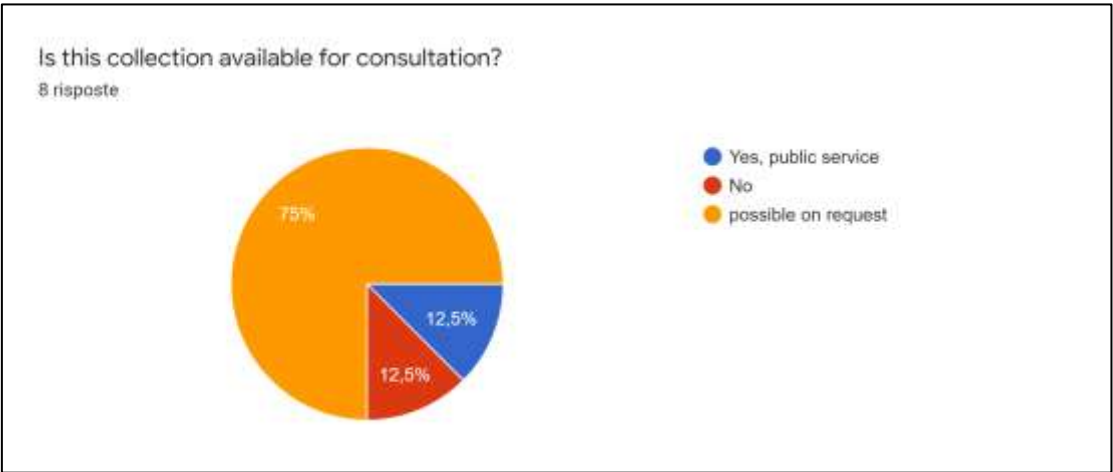
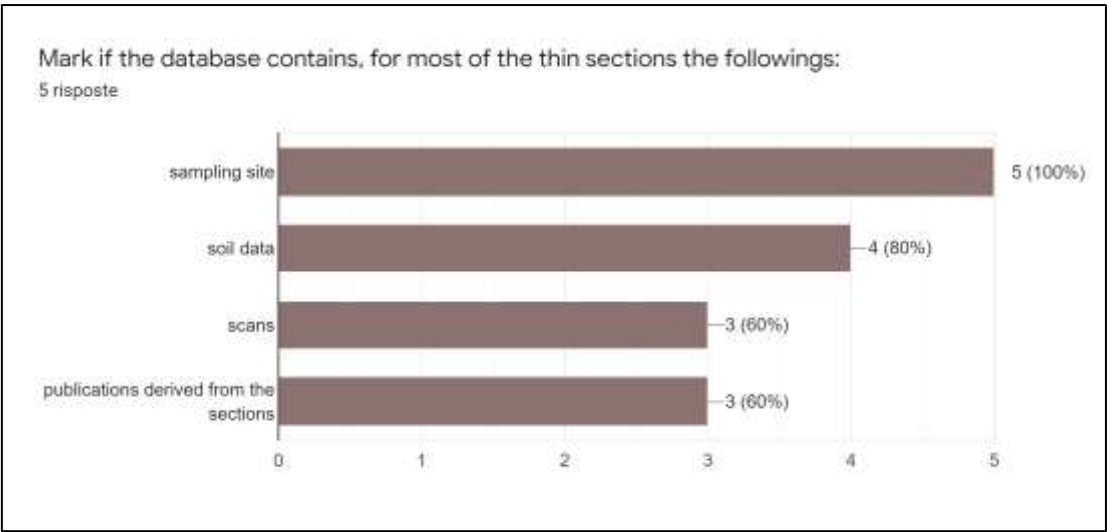
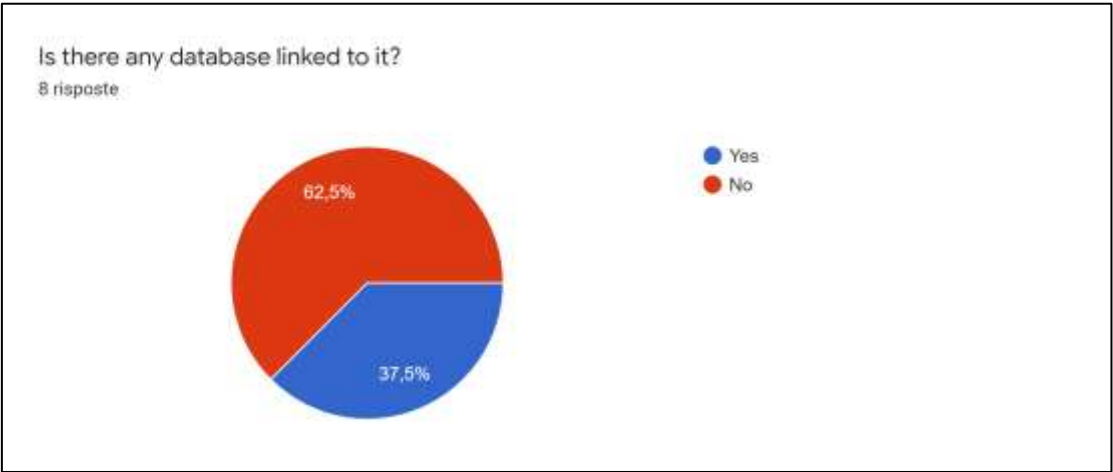
Currently we have received 8 reports about soil thin section collections but – also in this case - we believe that we can obtain more. Then please spread the word and continue to fill-in the google form at the same following link.

[https://docs.google.com/forms/d/e/1FAIpQLSf0OSiu4XvtaqlYV7oAEVxiooTp0L7YluBc7c468zmS9eHPYg/viewform?usp=sf\\_link](https://docs.google.com/forms/d/e/1FAIpQLSf0OSiu4XvtaqlYV7oAEVxiooTp0L7YluBc7c468zmS9eHPYg/viewform?usp=sf_link)

Please copy&paste the link on your browser and fill-in the questionnaire (10 minutes job) !

Here we report some figures describing some self-explaining key findings and in the next pages you will find a table where we reported a synthesis of the answers we had received.



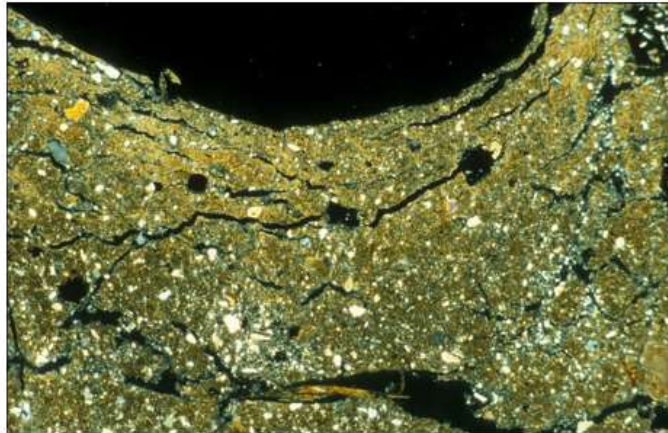


Name of the Institution	Range of number of thin sections	Express the size in cm (length x width) -		Connected database	The database contains:	Is this collection available for consultation?	Additional comments	Scientist who ordered the collection	Number of collections	More details about these different collections ?	What is it the main focus of the collection (s) ? (e.g. teaching, pedology, archeology, etc)	email address *
		main type	other sizes									
U d L	1000-5000	13 x 5 cm	4x5.. Mineralogical	Yes	Soil data (partial)	possible on request		Rosa M Poch, Jaume Porta, Rafael Rodriguez	More	1) collection of the lab 2) collection of the soil map of Catalonis		
Università degli Studi di Milano, Dipartimento di Scienze della Terra "A. Desio"	100-1000	cm X 5 cm	3 cm x 4cm, 9 cm x 12 cm	No		possible on request	We are planning to order the collection and prepare a database.		More	Collections of more members of the staff, including a retired professor	Research in paleopedology and geoarchaeology	andrea.zerboni@unimi.it
UMR5199 PACEA (CNRS, Univ. Bordeaux)	1000-5000	13 x 6		Yes	sampling site, soil data, scans, publications derived from the sections	Yes, public service	Mainly thin sections from palaeolithic sites, mainly SW France, and actual periglacial context	P. Bertran, J.-P. Texier, A. Lenoble, J.P. Raynal	One	Database here: <a href="https://fm02.db.humanum.fr/fmi/webd/PACEA_lamellotheque">https://fm02.db.humanum.fr/fmi/webd/PACEA_lamellotheque</a>	teaching, archaeology	alain.queffelec@u-bordeaux.fr
Estación Experimental de Zonas Áridas - Consejo Superior de Investigaciones	100-1000	10 cm x 5 cm		No	sampling site, soil data	possible on request	petrographic microscope linked to cámara and PC, vacuum impregnation unit, diamond saw, polishing rotary	Prof. Juan Puigdefábregas and Albert Solé-Benet	More	1) soils from badlands in SE Spain, 2) Soils from semiarid catenas on different lithologies (mica shists, dolomites, other).	Pedology part in past Geomorphological-Hydrological Projects.	albert@eeza.csic.es
Cultural Heritage Agency of the Netherlands (RCE)	1000-5000	6x8	8x16	No		possible on request	Lab facilities include polarisation and fluorescence microscopy as well as thin section production. Thin section production is at present not offered commercially.	Hans Huisman (RCE), Toine Jongmans (WUR), Herman Mucher (UvA), Maja Kooistra (KMS)	More	(1) Live collection of geoarchaeology thin sections (RCE), (2) Old teaching collection soil science Wageningen University (WUR) (3) Small selection geoarchaeology samples from (destroyed) collection University of Amsterdam (UvA) (4) Collection of (now terminated) KMS micromorphology consultancy.	Archaeology, teaching	huisman@cultureelerfgoed.nl
Dept. of Earth Sciences, 1812 Sir Isaac Brock Way, St. Catharines, ON L2S 3A1 Canada	1000-5000	7cm X 5cm		Yes	sampling site	possible on request		Prof. John Menzies	One	Glacigenic samples also, Pedological, Archaeological, Concrete etc.	A combination as this is also a commercial lab.	jmenzies@brocku.ca
CNRS	100-1000	14x7 cm		No		possible on request		Quentin Borderie	One		Archaeology	quentinborderie@yahoo.fr
CRISP - Interdepartmental Research Center at University of Naples Federico II	1000-5000	10 cm x 5 cm		in construction	sampling site, soil data, scans, publications derived from the sections	possible on request	We are planning to order the collection and prepare a database.	E.A. FitzPatrick (FitzPatrick Collection) and F. Terribile (CRISP & CNR collection)	More	The collection gathers more than 3600 soil thin sections (from many different countries) that E.A. Fitzpatrick donated to the CRISP Research Center. This collection was ordered, and analysed by Fitzpatrick and his students. In addition there is a collection of soil thin section (around 400) produced and studied by F. Terribile at CNR and at CRISP Research Centre	Many different focus on teaching and pedology (about soil morphology, genesis, parent material, soil sequences, features...)	fabio.terribile@unina.it
School of Environmental Sciences, University of Guelph, GUELPH, ON, N1G2W1, CANADA	1000-5000	4.6 cm x 2.7 cm	10cm x 7.5cm	Yes	sampling site, soil data, scans, publications derived from the sections	possible on request	have digital imaging facility	Was developed primarily by Agriculture Canada, R. Protz, R. St.Arnaud, A. Mermut, C. Fox	More	Canadian Soil Thin Section Collection (includes collections from AAFC, U of Guelph, U of Saskatchewan)	Pedology	rheck@uoguelph.ca

## Commission 1.1 Website

We have applied for IUSS Stimulus funds (see the heading of our proposal in the figure below). The requested funds (max 2500 USD) will be made available to engage experts to support us in developing the new website of our Commission.

### Proposal: IUSS Soil Morphology and Micromorphology Website



Objective: Redevelopment of the webpresence for IUSS Commission 1.1: Soil Morphology & Micromorphology.

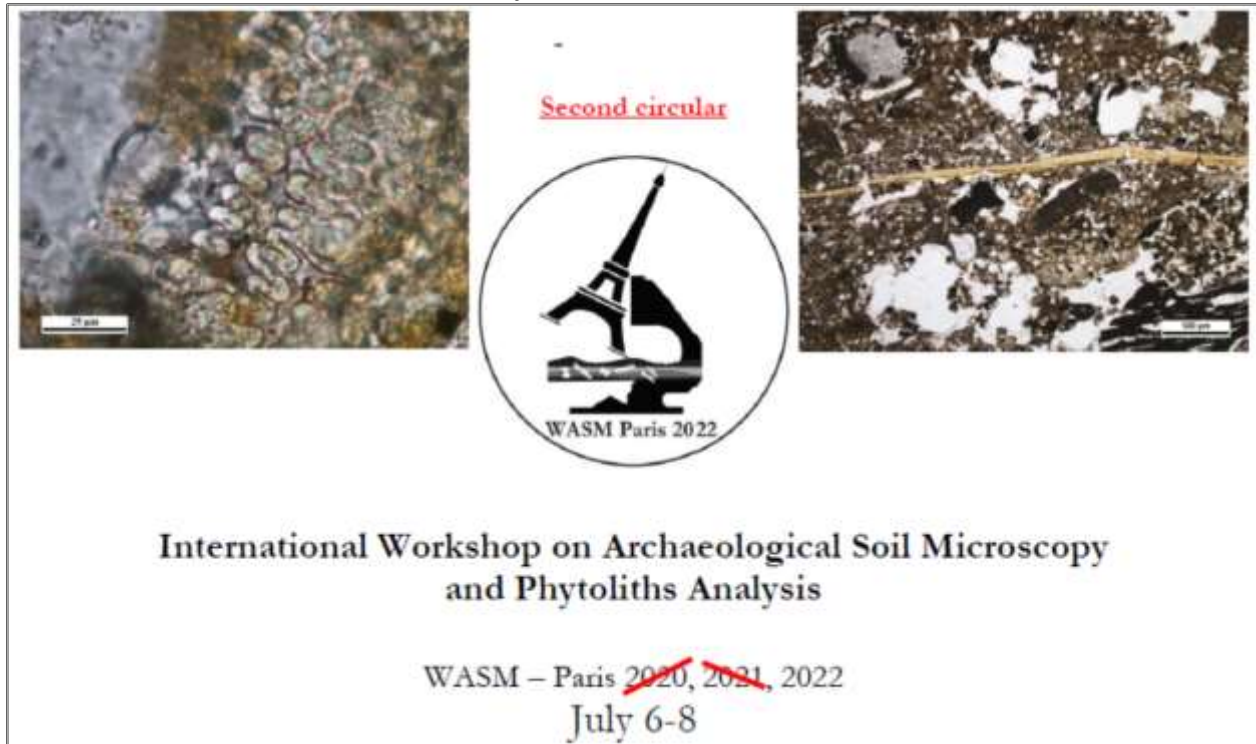
Requested contribution: 2500 USD

Applicants: Dr. Fabio Terribile (Chair) and Dr. Richard J Heck (Vice-Chair), of Commission 1.1

# FORTHCOMING MEETINGS

## the 12th International Meeting on Phytolith Research (IMPR)

Now we are happy to announce that the **WASM PARIS 2022** will be held at **Sorbonne Université**- the **6th, 7th and 8th of July 2022**.



In July 2022 the 12th International Meeting on Phytolith Research (IMPR) will host two sessions (# 319 Phytoliths in Geoarchaeology and Micromorphology and # 342 Microscopy session: phytoliths in sediment & soil thin sections) addressing the integration of micromorphology and phytolith analysis. The sessions will take place in a joint virtual meeting for the IMPR and the European Association of Archaeologists and are organized by A. Polo (University of Sheffield), Y. Devos and L. Vrydaghs (Maritime Cultures Research Institute-Vrije Universiteit Brussels) to raise awareness on the potential of phytolith analysis of thin sections and fuel discussion in both research fields. Further details can be found at the meeting website:

<https://www.e-a-a.org/ea2021>

### A synthesis of the Registration Form (July 6-8)

First name:

Surname:

Email:

Affiliation:

Street + Street n°:

City + postal code:

Country:

- 50 euros
- 30 euros (student)

Payment information:

Account: ASSOC. FORTUM

IBAN: FR76 1440 6001 6190 0148 8456 327

Swift: AGRIFRPP844

Bank name: Credit Agricole Val de France

Purpose of Payment : your name

Please don't forget to give your name during the bank transfer process.

Please return this registration form by mail to [quentinborderie@yahoo.fr](mailto:quentinborderie@yahoo.fr) before 30th April 2022



# REPORT ON PAST MEETINGS

The first Virtual Micromorphology Meeting organised by Dagmar Fritzsich (University of Frankfurt), Astrid Röpke (University of Cologne) and Christine Pümpin (University of Basel) took place successfully on April 23<sup>th</sup>. A total of 129 micromorphologists from 30 countries all over the world registered and participated actively. The programme included four great talks given by Y. Devos (Vrije Universiteit Brussel), K. Ismail-Meyer (University of Basel), R. Shahack-Gross (University of Haifa) and L. Lisá (Czech Academy of Science) and three exciting live microscopy sessions conducted by H. Huisman (Groningen University), Q. Borderie (ArScAn - UMR 7041) and C. Mallol (Universidad de la Laguna) with thin sections shared via Zoom. The scientific exchange of thin section images and discussions took place in accordingly themed breakout rooms. The online meeting was well received by the participants and the desire of the micromorphology community to meet again is strong, therefore a second ViMi will take place later this year, most likely in November.



# AWARDS IN SOIL MICROMORPHOLOGY

## **Results from the Young Micromorphology Publication Awards (YMPA) 2021**

*The purpose of this award is to encourage and promote the use of soil micromorphology by young scientists. The Award will be given to one or more young scientist who has published research in the preceeding 4 years, that is an outstanding contribution to the principles, methodology, or application of micromorphology.*

*The composition of the Judging Committee, for this competition was: Prof. Fabio Scarciiglia (University of Calabria), Dr. Irina Kovda (Dokuchaev Soil Science Institute), Dr. Peter Kühn (University of Tübingen), Dr. Richard J Heck (University of Guelph, Vice-Chair of Commission 1.1), and Prof. Fabio Terribile (University of Napoli Federico II, Chair of Commission 1.1). In total, the Judging Committee received six competitive submissions to consider.*

Commission 1.1 - Soil Morphology and Micromorphology has the pleasure to award the Young Micromorphologist's Publication Award 2021 to Dr. Jennifer Kielhofer.

In her paper “The micromorphology of loess-paleosol sequences in central Alaska: A new perspective on soil formation and landscape evolution since the Late Glacial period” have appreciated very much the way you have used soil micromorphology to improve field interpretation on the loess-paleosol sequence in Central Alaska, improving current models of Late Glacial landscape evolution. You managed to demonstrate the importance of local-scale landscape heterogeneity by showing at the microscale that the well-known thin organic-rich layers resulted from dramatically different processes and interactions between soil formation, freeze-thaw activity, and/or aeolian deposition at each site. Thus, demonstrating that not all dark brown organic-rich layers are buried soils, and the importance of periglacial processes in producing such soil features.

The members of the Judging Committee would like to express great appreciation to Dr. Jennifer Kielhofer and also to the other 5 candidates for their specific contribution to the field of soil micromorphology. The initiative, creativity, and productivity of our young micromorphologists is fundamental to the future success of our science.

## **KUBIENA MEDAL 2022 (extension until end of May)**

### Definition

The Kubiena Medal award is conferred by the IUSS Soil Morphology and Micromorphology Commission (originally Subcommission B - ISSS) to commemorate Walter L Kubiëna for his distinguished contribution to soil micromorphology. This IUSS medal is awarded for outstanding and sustained contribution in the discipline of soil micromorphology.

Walter Ludwig Kubiëna (born 1897 in Neutitschein, Moravia, † 1970 in Klagenfurt) was an Austrian soil scientist. He is considered to be the founder of micromorphological soil research, which began with the publication, in 1938, of his book “Micropedology”. His works opened up a new dimension to soil science and had a lasting influence on international research in the areas of soil genesis, soil classification and soil geography.

### Criteria for selection of nominees

The awardees must demonstrate an outstanding and sustained performance in the discipline of soil micromorphology. All areas of micromorphology including research, teaching and its application to environmental, agricultural, archaeological and industrial problems are considered relevant.

Periodicity of nomination: The Kubiëna Medal is currently awarded every four years and presented at the World Congress of Soil Science of the IUSS.

### Nomination procedure

The call for the nominations is publicized, during the year before the date of the award, via the Commission Newsletter, Commission Business Meetings and/or IUSS Alerts. Considering that the next WCSS date will be August 2022, it was decided to announce now (*the year before the date of the award*) the next Kubiena award 2022 call.

The nominees may be proposed by institutions, societies, commissions and working groups of the IUSS, and individuals. Members of the Award committee are not eligible to make nominations or second nominations.

The proposal for nomination must be submitted to the Award committee chair, and should include:

1. Statement of key achievements and career highlights of the nominee (1 page)
2. Curriculum vitae detailing career history and publication record of the nominee
3. Name of proposer and seconder for the nominee
4. Any other relevant information in support of the nominee
5. Full address and contact details of the nominee

### Award Committee Members

The selection committee for the Kubiëna Medal award is composed of the previous Kubiëna medal holders plus the Chair and past Chair of IUSS Commission 1.1. Soil Morphology and Micromorphology.

### Awardees

1	Ekaterina Yarilova & Roy Brewer	1985	7th IWMSM Paris (France)
2	H. Jürgen Altemüller	1988	8th IWMSM Texas
3	Georges Stoops	1992	9th IWMSM Townsville (Australia)
4	Ewart Adsil FitzPatrick	1998	16 <sup>th</sup> ISSS Congress Montpellier
5	Larry Wilding	2001	11 <sup>th</sup> IWMSM Ghent (Belgium)
6	Herman Mucher & A. Jongerius	2006	18th WCSS Philadelphia (USA)
7	Nicolas Fedoroff	2010	19th WCSS Brisbane (Australia)
8	Rienk Miedema	2014	20th WCSS Jeju (Korea)
9	Maria Gerasimova	2018	21th WCSS Rio de Janeiro (Brazil)
10		2022	22th WCSS Glasgow (UK)

### How to apply

The nominees may be proposed by institutions, societies, commissions and working groups of the IUSS, and individuals. Members of the Award committee are not eligible to make nominations or second nominations.

The proposal for nomination must be submitted to the Award committee chair, and should include:

1. Statement of key achievements and career highlights of the nominee (1 page)
2. Curriculum vitae detailing career history and publication record of the nominee

3. Name of proposer and seconder for the nominee
4. Any other relevant information in support of the nominee
5. Full address and contact details of the nominee

**Applications are due May 31, 2021.** Send by email applications to: prof. Fabio Terribile [fabio.terribile@unina.it](mailto:fabio.terribile@unina.it)

## OTHER AWARDS CONNECTED TO SOIL MICROMORPHOLOGY

Dan Yaalon Young Scientist Medal Award Committee

Call for applications for the Dan H. Yaalon Young Scientist Medal

An award by the IUSS Division 1: Soils in Space and Time and Commission 4.5: History, Philosophy and Sociology of Soil Science.



### Nomination

The Dan H. Yaalon Young Scientist Medal is awarded once every four years at the World Congress of Soil Science. Next time will be at the 22nd World Congress at Glasgow in 2022

### Applications

Please send applications to the nomination committee c/o Karl Stahr [kstahr@uni-hohenheim.de](mailto:kstahr@uni-hohenheim.de) or mail to: Prof. Dr. Karl Stahr Universität Hohenheim (310a) D 70593 Stuttgart Germany.

### Criteria for the selection of nominees for the Dan Yaalon Young Scientist Medal

A nominee should have the following qualifications:

- be a researcher in her/his early scientific career, i.e., PhD student or postdoc researcher within the first 5 years after PhD graduation and,
- be an active member of a national soil science society and/or the International Union of Soil Science and,
- have published in at least one of the following fields: Soil morphology, Soil micromorphology, Soil geography, Soil genesis, Soil classification, Pedometrics, Palaeopedology, History of soil science, Philosophy of soil science, Sociology of soil science, and
- either have made a significant contribution that advanced any field of soil science as presented above or compiled a body of work that has advanced the science, success, methodology, or use of the above fields. The medal is not awarded posthumously. Current officers of IUSS Divisions, Commissions and Working Groups cannot be nominated.

## Nomination procedure

The nominees may be proposed by institutions, societies, commissions and working groups of the IUSS, and by individuals. Self-nomination is not encouraged. The proposal for nomination should include a short justification, including the main steps of the scientific career of the nominee, his/her main scientific publications and the major contribution(s) to the development of one or more of the following fields: Soil morphology, Soil micromorphology, Soil geography, Soil genesis, Soil classification, Pedometrics, Palaeopedology, History of soil science, Philosophy of soil science, Sociology of soil science. The deadline for nominations is November 1, 2021. The nominees will be notified on February 1, 2022. The medalist name will be announced in the following IUSS alert. The presentation of this medal will be take place at the 22nd World Congress in Glasgow, Scotland in August 1, 2022.

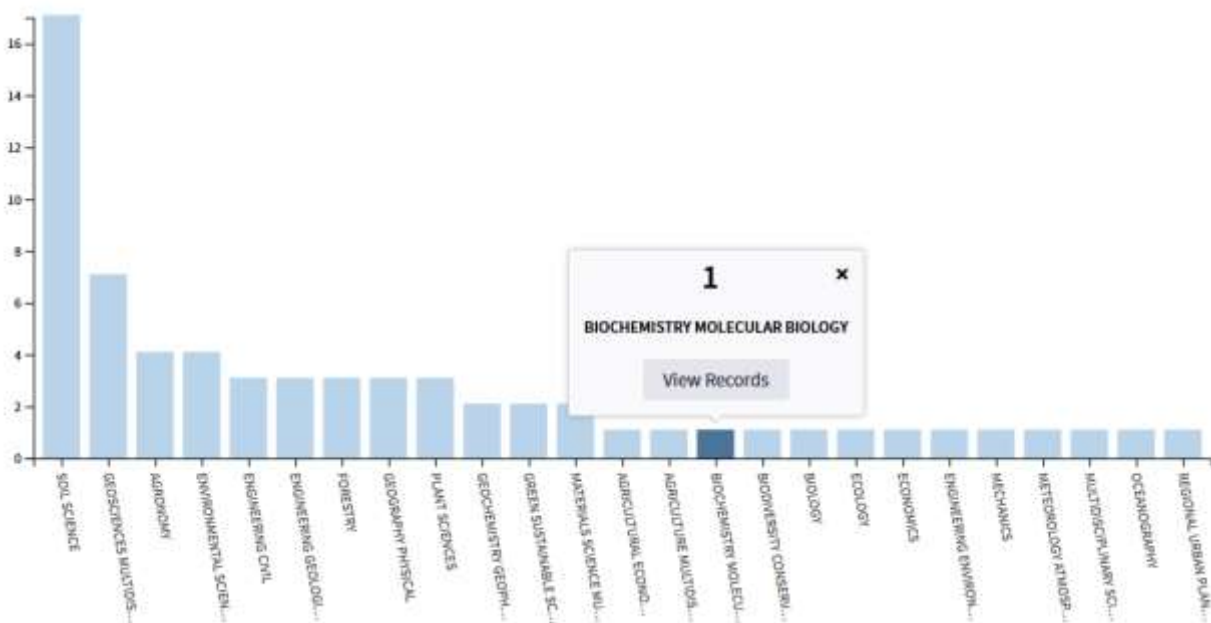
For further information please visit: [http://www.iuss.org/index.php?article\\_id=631](http://www.iuss.org/index.php?article_id=631)

## A GRAPHICAL OVERVIEW OF OUR RESEARCH PAPERS

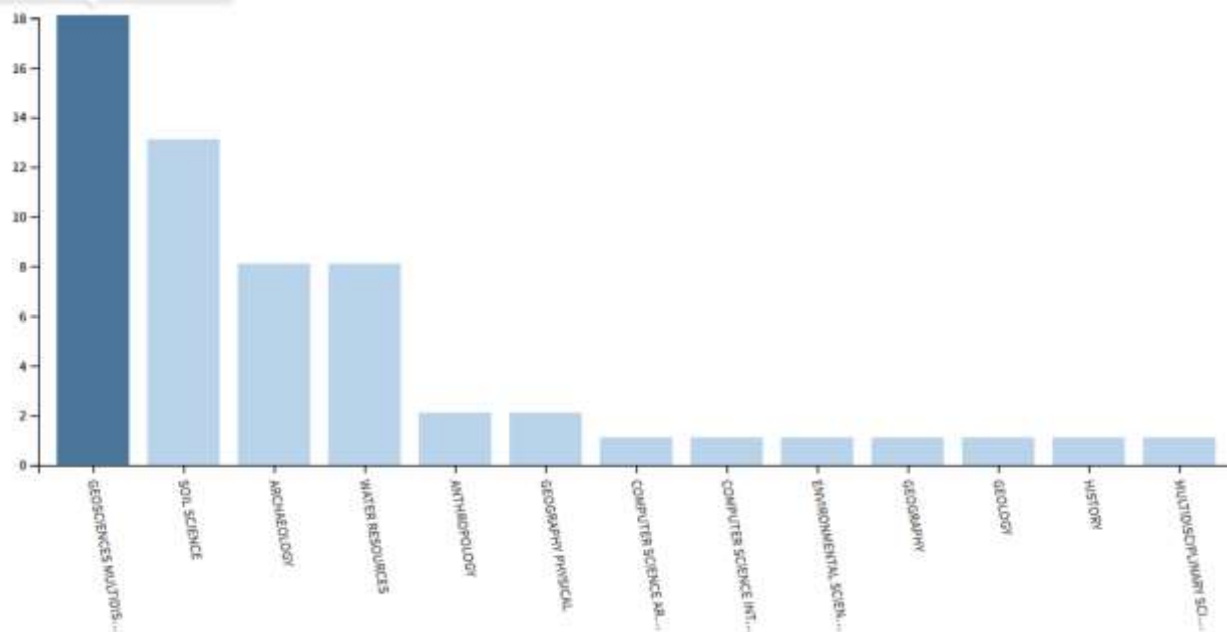
Following the previous issue, here we report an enlarged graphical overview (after WoS) about the occurrence of papers from the period 2020-2021 (13/05/2021) – ranked for subject science category - having “soil micromorphology” and “soil morphology” as topic. Of course each paper can be ascribed to more than one science category.

The overall picture provides a rapid view about the strength of both soil micromorphology as linkage between different disciplines. Here it is of special interest to highlight the large importance of archeology in soil micromorphological papers while soil morphology papers remains mainly important within the soil science boarders.

**“Soil Morphology”** (43 papers)



## “Soil Micromorphology” (32 papers)



## RESEARCH NOTES, BOOKS AND PUBLICATIONS

*Reminder (already published in the previous Buletin):* Guidelines for Analysis and Description of Soil and Regolith Thin Sections (2<sup>nd</sup> edition) 2020

by *Georges Stoops*

(xv + 227 pages + index; including 18 tables, 63 figures, 62 colour plates);  
Published by the Soil Science Society of America in partnership with Wiley  
ISBN: 978-0-891-18975-6  
Expected in Summer 2020; Provisional price: ± 75 – 80 US\$  
More information: <https://www.wiley.com/en-us/9780891189756>

In order to stop the confusing proliferation of concepts and terms used by micromorphologists, the International Society of Soil Science (now International Union of Soil Scientists) set up an International Working Group on Micromorphology to prepare a uniform, internationally acceptable system. This resulted in the Handbook for Soil Thin Section Description by Bullock et al. (1985). After it was out of print for some years, the SSSA invited the authors to prepare a revised version. The new “Guidelines for Analysis and Description of Soil and Regolith Thin Sections”, by G. Stoops, was published in 2003. It is considered worldwide as the standard for concepts and terminology for soil thin section descriptions, and widely used by soil scientists, archaeologists and Quaternary geologists. After it became out of print almost three years ago, an upgraded second edition was urgently expected.

The content of the second edition is largely identical to that of the original book, although a number of improvements are made: some topics are restructured in a more logic way, several definitions are partly rephrased to make them linguistically more appropriate, the content is updated with recent new information, part of the figures appear in colour, some appendixes are deleted or incorporated in the text, and the micrographs, that were added as a CD-ROM to the first edition, now appear in the text as full colour plates (each containing generally 6 micrographs). In addition new micrographs, figures and tables are added.

## Content

Introduction

Definition and Historical Review

Aspects of Thin Section Studies

Elements of Fabric

Voids, Aggregates and microstructure

Mineral and Organic Constituents

Groundmass

Pedofeatures

Thin Section Description

References

Appendix: Materials, Light, and the Petrographic Microscope

Subject Index

## **List of the most cited articles published in 2020 (having soil morphology or soil micromorphology as topic)**

- ✓ X-ray microtomography analysis of soil pore structure dynamics under wetting and drying cycles 2020.GEODERMA, 362. DOI:10.1111/sum.12556
- ✓ Soil microstructure alterations induced by land use change for sugarcane expansion in Brazil 2020.SOIL USE AND MANAGEMENT, 36. DOI:10.1016/j.catena.2020.104649
- ✓ Physicochemical properties and micromorphology of degraded alpine meadow soils in the Eastern Qinghai-Tibet Plateau 2020.CATENA, 194. DOI:10.1016/j.catena.2019.104319
- ✓ Soil parent material is the main control on heavy metal concentrations in tropical highlands of Brazil 2020.CATENA, 185. DOI:10.4102/koedoe.v62i2.1584
- ✓ Identification of hydropedological flowpaths in Stevenson-Hamilton catena from soil morphological, chemical and hydraulic properties 2020.KOEDOE, 62. DOI:10.1016/j.coldregions.2020.103183
- ✓ Influence of freeze-thaw cycles on microstructure and hydraulic conductivity of saline intact loess 2021.COLD REGIONS SCIENCE AND TECHNOLOGY, 181. DOI:

# IN MEMORIAM TO JOSÉ AGUILAR RUIZ

Prof. José Aguilar Ruiz passed away on March 2nd.

Dr. Aguilar was born in Jaén (Andalusia, Southern Spain) in 1939. He studied at the Faculty of Pharmacy of the Granada University, achieving the highest grades. From the beginning on he showed great interest in soil science, especially in soil micromorphology as attested by his Doctoral Thesis entitled “Origen y naturaleza de las microestructuras de orientación y los agregados de algunos tipos de suelos”, carried out under the supervision of Prof. Miguel Delgado, one of the pioneers of this scientific discipline in Spain. He completed his education on soil micromorphology during a postdoctoral stay in the Instituto de Fisiología Vegetal y Edafología in Madrid with Dr. Josefina Benayas, a great Spanish soil scientist, also collaborating with Dr. Alonso Pascual and Dr. Pérez Mateos. He finished his postdoctoral studies at the Rothamsted Experimental Station with the unforgettable Dr. Peter Bullock.



After his postdoctoral studies, Prof. Aguilar joined the Department of Soil Science of the Granada University. In 1975 he gained a Full Professor position and afterwards he founded a new section in the Faculty of Sciences of this university, introducing the soil science discipline in the Grades of Biology, Geology and Environmental Sciences. Thanks to his tireless work (with more than 50 awarded research projects) he provided his laboratory with an excellent equipment.

Prof. Aguilar was Honorary Member of the Sociedad Española de la Ciencia del Suelo (SECS, Spanish Society of Soil Science) after holding the Presidency from 1994 to 2001.

Dr. Aguilar played an essential role in the development of soil micromorphology in Spain. His first research works were internationally recognized when he was invited to become member of the International Working Group on Soil Micromorphology of the International Soil Science Society, and to collaborate to the edition of the “Handbook for Soil Thin Section Description” (Bullock et al., 1985). Moreover, his scientific excellence was also reflected in several Soil Science fields such as chemistry, cartography, classification, genesis, mineralogy, agronomy, erosion and contamination, among others.

Prof. Aguilar imparted his knowledge in many international courses on Soil Micromorphology in the frame of ERASMUS-projects in Europe, and organized by the IUSS.

Besides his fabulous research heritage, with more than 250 publications, including scientific papers and books, he was always characterized by the great enthusiasm he showed while transmitting his broad expertise in multiple pedological topics to his 22 PhD students, currently members of a very important school of soil scientists in Granada and Almería.



Above all, Prof. Aguilar Ruiz cultivated another passion: his family and friends. He dedicated a great part of his life to them. His wife, Trinita, shared his scientific life and was always by his side.

Farewell, dear friend. Rest in peace, your life was full, you have left a magnificent legacy.

Carlos Dorronsoro.

