

COMMISSION 1.1

SOIL MORPHOLOGY & MICROMORPHOLOGY

International Union of Soil Sciences



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<http://loess.umcs.lublin.pl/micro.htm>

2015
International
Year of Soils



PRESENTATION

Dear Colleague,

Welcome to the April Soil Micromorphology Newsletter.

This is the first newsletter of our International Year of Soils! Besides the usual sections with the publications, forthcoming meetings and courses, the organizing team of the next Congress on Soil Micromorphology Mexico 2016 is informing that the release of the first circular of that meeting will take place next June. I'm going to send you that circular as soon as it appears.

I must also inform you about the very sad news of the decease of Dr John B. Dalrymple, an outstanding micromorphologist and paleopedologist. Dr. Maria Raimonda Usai has kindly written a moving obituary, and has dedicated the Archaeological Soil Micromorphology Workshop that will take place next June in Sardinia to him.

Very best regards,

Rosa M Poch (Chair) and Richard Heck (Vice-Chair)
rosa.poch@macs.udl.cat

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IN MEMORIAM

JOHN B. DALRYMPLE



Photo: Mrs. Dalrymple

Dr John B. Dalrymple, one of the most important soil micromorphologists of his generation, has recently passed away.

He was outstanding as a human being and for his dedication to his students, with whom he pioneered, both theoretically and experimentally, important Pedology and Micromorphology work. His contribution was fundamental to the progress of the disciplines of Pedology, Paleopedology, Soil Micromorphology and applications to archaeological interpretations.

He was born in Coventry on 23 November 1930 and, after his secondary schools, was first student for his Bachelor Degree in Geography at the University of Sheffield.

He then did an MSc in Archaeology in the Institute of Archaeology in London, followed by a PhD on the Pedology, Archaeology and Geography in Wye College, Kent. During his PhD he taught first as a Demonstrator and then as a Junior Lecturer.

It was during these years, that he did his pioneering work on the application of soil micromorphology to Archaeology, published in 1958 in the *Journal of Soil Science* [‘The application of Soil Micromorphology to fossil soils and other deposits from archaeological sites’]. This was the beginning of an entirely new field of studies, and opened the way to today’s archaeological soil micromorphology and geoarchaeological applications.

In 1960 he was appointed as a Senior Lecturer in Pedology in the Department of Geography in Oakland, New Zealand. His work here diversified again, extending to his then lifelong treasured multi-scale perspectives going from microscopy to large landscape and soil interpretations with three-dimensional approach. Hence, his research in New Zealand was again of a ground-breaking character, as he developed the ‘Hypothetical Nine Land Surface Model’ (published in 1968), worldwide-famous and important for the understanding of the relationships between slopes and soils. The model’s principle was the recognition

that all natural slopes potentially consist of a convex upper part and a concave lower part, separated by mid-slope variations, and defined for the first time nine 'units' where the type and extent of weathering, hydrology and soil formation are all causally related to the characters of the slope 'unit' in which they occur.

In 1965 he moved back to the UK, where he joined the University of Reading, Department of Soil Science, where he taught Pedology, Soil Survey and Land Evaluation, Paleopedology (with work with the Working Group on the Origin and Nature of Paleosols) and particularly Soil Micromorphology. With his students he carried out pioneering and innovative research on processes and soil genesis, with both empirical and experimental applications and, also with support of highly qualified technician Karen Gutteridge, developed new methods for thin section preparations and interpretations and established a soil micromorphology lab where many of the then future micromorphology scientists were trained.

John Dalrymple was intolerant of scientific assumptions based on circumscribed concepts that did not fully account for the wholeness and interrelatedness in space between land, environment and soil, and on this basis, he fought with persistence and dignity to develop, maintain and uphold standards of micromorphology and pedology at the levels he believed right.

His students and then research collaborators were many and it is impossible to name them all in this note.

We, your past students, are grateful to you, Dr Dalrymple, from whom we learnt most of what we know in soil science and... a bit more about life.

Maria Raimonda Usai

PUBLICATIONS

Singh, Seema, B. Parkash, and A. K. Awasthi. "Tectono-geomorphic and environmental set-up deduced during deposition of Mio-Pleistocene sediments in NW Himalaya, India." *CATENA* 126 (2015): 173-188.

Abstract:

Detailed pedofacies characterization along-with lithofacies investigations of the Mio-Pleistocene Siwalik sediments exposed in the Ramnagar sub-basin have been studied so as to elucidate variability in time and space of fluvial processes and the role of intra- and extra-basinal controls on fluvial sedimentation during the evolution of the Himalayan foreland basin (HFB).

Dominance of multiple, moderately to strongly developed palaeosol assemblages during deposition of Lower Siwalik (~ 12–10.8 Ma) sediments suggest that the HFB was marked by Upland set-up of Thomas et al. (2002). Activity of intra-basinal faults on the uplands and deposition of terminal fans at different times caused the development of multiple soils. Further, detailed pedofacies along-with lithofacies studies indicate prevalence of stable tectonic conditions and development of meandering streams with broad floodplains. However, the Middle Siwalik (~ 10.8–4.92 Ma) sub-group is marked by multistoried sandstones and minor mudstone and mainly weakly developed palaeosols, indicating deposition by large braided rivers in the form of megafans in a Lowland set-up of Thomas et al. (2002). Significant change in nature and size of rivers from the Lower to Middle Siwalik at ~ 10 Ma is found almost throughout of the basin from Kohat Plateau (Pakistan) to Nepal because the Himalayan orogeny witnessed its greatest tectonic upheaval at this time leading to attainment of great heights by the Himalaya, intensification of the monsoon, development of large rivers systems and a high rate of sedimentation, hereby a major change from the Upland set-up to the Lowland set-up over major parts of the HFB.

An interesting geomorphic environmental set-up prevailed in the Ramnagar sub-basin during deposition of the studied Upper Siwalik (~ 4.92 to < 1.68 Ma) sediments as observed from the degree of pedogenesis and the type of palaeosols. In general, the Upper Siwalik sub-group in the Ramnagar sub-basin is subdivided from bottom to top into the Purmandal sandstone (4.92–4.49 Ma), Nagrota (4.49–1.68 Ma) and Boulder Conglomerate (< 1.68 Ma) formations on the basis of sedimentological characters and change in dominant lithology. Presence of mudstone, a few thin gravel beds and dominant sandstone lithology with weakly to moderately developed palaeosols in the Purmandal sandstone Fm. indicates deposition by shallow braided fluvial streams. The deposition of mudstone dominant Nagrota Fm. with moderately to some well developed palaeosols and a zone of gleyed palaeosols with laminated mudstones and thin

sandstones took place in an environment marked by numerous small lakes, water-logged regions and small streams in an environment just south of the Piedmont zone, perhaps similar to what is happening presently in the Upland region/the Upper Gangetic plain. This area is locally called the 'Trai region' (Pascoe, 1964). Deposition of Boulder Conglomerate Fm. took place by gravelly braided river system close to the Himalayan Ranges. Activity along the Main Boundary Fault led to progradation of these environments distal-ward and led to development of on the whole a coarsening upward sequence.

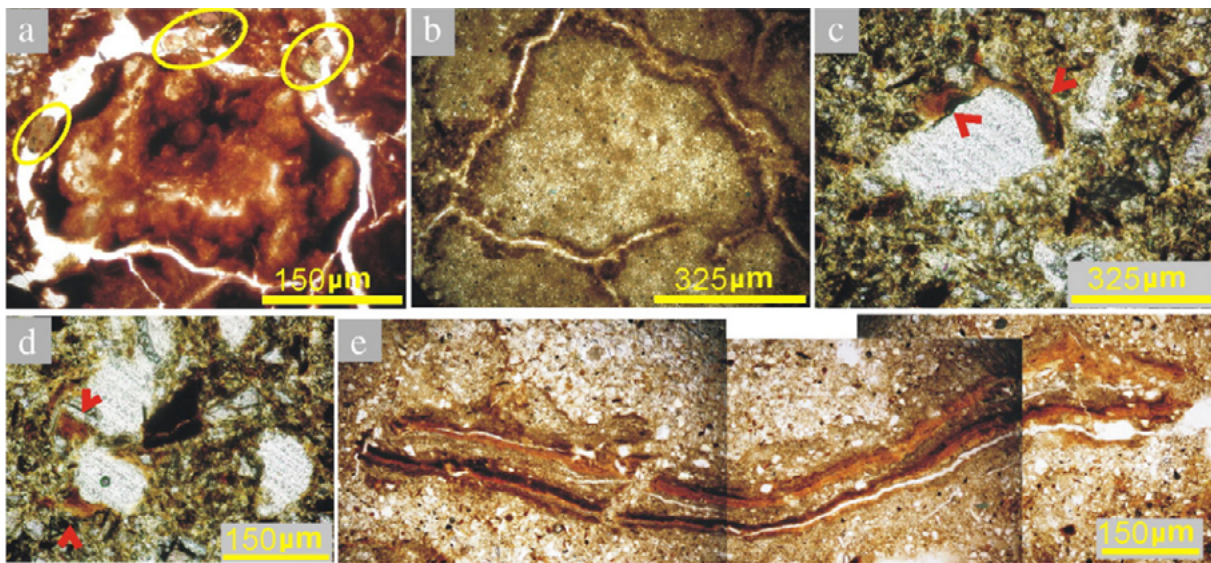


Image: Seema Singh

Micromorphological features of Pedotype V palaeosols. (a) Sub-rounded blocky ped with animal excrements (marked by yellow ellipse) in the Bs horizon of the Lower Siwalik palaeosol in the J-N section, PPL (b) Well developed, completely accommodating ped with sesquian hypo-coating in the Btk horizon of Upper Siwalik (i.e. Nagrota Fm.) palaeosol in the J-N section, PPL (c) & (d) Irregular, discontinuous argillan to ferriargillan coatings in the Bt horizon of Lower Siwalik palaeosols in the J-N section, PPL. Micromorphological features of Pedotype VI palaeosols. (e) Thick argillan to ferriargillan hypocoating along channels in the Bt horizon of Upper Siwalik (i.e. Nagrota Fm.) palaeosol in the J-N section, PPL

NEW BOOK



Image: F.E. Pascual Bravo

MICROMORFOLOGÍA DE SUELOS Y TÉCNICAS COMPLEMENTARIAS

JC Loaiza, G Stoops, RM Poch, M Casamitjana (Eds.)

Fondo Editorial Pascual Bravo, Colombia.

ISBN 978-958-58510-3-0

First comprehensive handbook on soil micromorphology and ancillary techniques in Spanish.

Orders and more information:

Maria Casamitjana

mcasamitjanac@unal.edu.co

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Introducción G. Stoops

1. Muestreo de suelos con énfasis en micromorfología. J.C. Loaiza, R.M. Poch.
2. Mineralogía óptica. E. Tauler, A. Canals.
3. Determinación de arcillas. R. Zapata, M. Casamitjana.
4. Análisis de contextura de la masa basal mineral y los rasgos edáficos del suelo. G. Stoops.
5. Composición de la masa basal y de los rasgos edáficos del suelo. G. Stoops.
6. Porosidad y microestructura de suelos. H. Morrás.
7. Descripción de los componentes orgánicos del suelo. M. Kooistra.
8. Micromorfometría R.M. Poch.
9. Descripción de láminas delgadas de suelos y sedimentos. R.M. Poch.
10. Aplicaciones en geoarqueología. C. Mallol.
11. Caracterización de propiedades físicas de suelos mediante análisis de imágenes y simulación fluido-dinámica a escala de poro. V.R. Gutiérrez, J. Mejía.

FORTHCOMING COURSES

INTENSIVE TRAINING COURSE ON SOIL MICROMORPHOLOGY Zagreb, 17-28 August 2015



Image: Lonely Planet - Media Gallery

Presentation

The course will comprise lectures, exercises with thin sections provided by the lecturers and also with material brought by the participants and visits to a thin section lab. There will be a maximum of 2 participants per microscope, as well as facilities to work with the microscopes during extra time and to discuss the participants own thin sections with lecturers and colleagues. A certificate issued by the Croatian Geological Survey, Zagreb, Croatia, will be handed to the participants who attend a minimum hours of lectures. The approximate program of the course is the following:

- Principles of mineralogy and petrography, optical mineralogy
- Micromorphology sampling and making thin sections

- Guidelines for the description of thin sections of soils and regoliths
- Micromorphology of soil materials and identification of soil formation processes: carbonate-, gypsum-, and salt affected soils, soils developed on volcanic rocks, clay accumulation, hydromorphic soils, tropical and highly weathered soils, glacial and periglacial processes.
- Micromorphometry and image processing.
- Soil genesis and classification
- Application of micromorphology in carbonate concretion-investigations
- Application of micromorphology in archaeology
- Additional techniques
- Personal work: Thin section study, exercises on thin section description
- Optional weekend excursion through the Hrvatsko Zagorje region with sites visiting:
 Kraneamus - Krapina Neanderthal Museum <http://mkn.mhz.hr/en/>,
 Trakošćan - the Renaissance castle <http://www.trakoscan.hr/index-en.html>
 Aquae lasae - Roman thermae http://en.wikipedia.org/wiki/Aquae_lasae
- Introduction, sampling techniques, thin section preparation
- Optical mineralogy, mineral identification in thin sections
- Thin section description: microstructure, components, pedofeatures
- Systematics of description of thin sections
- Argillic, spodic, oxic and vertic materials. Freeze-thaw and hydromorphic features
- Paleosols, Soil surface features and Technosols
- Mediterranean and arid soils: salts
- Mediterranean and arid soils: carbonates and gypsum
- Archaeological applications
- Introduction to micromorphometry

Dates and hours

22-sep 9:00-11:00 Reception of participants 11:30-13:30 Introduction, sampling techniques and thin section preparation 15:00-17:00 Sampling techniques: field demonstration

23-sep 9:00-11:00 Optical mineralogy 11:30-13:30 Optical mineralogy 15:00-17:00 Identification of minerals in thin sections

24-sep 9:00-11:00 Thin section description: 3D/2D, fabric concepts 11:30-13:30 Microstructure 15:00-17:00 Mineral and organic components

25-sep 9:00-11:00 Microstructure 11:30-13:30 Mineral weathering 15:00-17:00 Groundmass and b-fabric

26-sep 9:00-11:00 Pedofeatures 11:30-13:30 Pedofeatures 15:00-17:00 Exercises and questions about the Guidelines Weekend excursion

29-sep 9:00-11:00 Systematics of description of thin sections 11:30-13:30 Argillic, Spodic, oxic and vertic materials 15:00-16:30 Freeze / thaw and hydromorphic features

30-sep 16:30-18:00 Personal work 9:00-11:00 Agronomical and soil management applications 11:30-13:30 Personal work 15:00-16:30 Mediterranean and arid soils: salts 16:30-18:00 Personal work

01-oct 9:00-11:00 Mediterranean and arid soils: carbonates 11:30-13:30 Personal work 15:00-16:30 Mediterranean and arid soils: gypsum 16:30-18:00 Personal work

02-oct 9:00-11:00 Archaeological applications: caves, archaeological sites 11:30-13:30 Personal work 15:00-16:30 Archaeological applications: building material 16:30-18:00 Personal work

03-oct 9:00-11:00 Introduction to micromorphometry 11:30-13:30 Personal work 15:00-16:30 Evaluation

Lecturers

Georges Stoops, University of Ghent

Rosa Maria Poch Claret, University of Lleida

Vera de Melo Marcelino, University of Ghent

Lidija Galović, Croatian Geological Survey

Hrvoje Posilović, Croatian Geological Survey

Mihovil Brlek, Croatian Geological Survey

Admission requirements

The course is directed to students or graduates in agronomy, archeology, geology, environmental sciences, and forestry in its curriculum.

Procedure selection

The admission to the course will follow the order of inscription. In case of excess of demand, criteria as the interest of the applicant, the need for micromorphology training for his/her work will be taken into account. Special criteria will be applied for particular cases.

Dates and deadlines

The course will take place during the period 17 August – 28 August 2015

Deadlines: Application: 1 May, 2015

Payment: 1 June, 2015

Maximum Of Applicants

30

Fee

Approximately 350 euros (depending on the number of participants). It will be possible to establish the registration fee after we receive preliminary expressions of interest. It will include Intensive training course on soil micromorphology, two coffee-breaks with snacks per day and guided tour of Zagreb city.

Accommodation

Information on accommodation will be provided in the 2nd circular.

Coordinator And Contact

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Organizator

Croatian Geological Survey

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Croatia

NEXT MEETINGS

GLOBAL WORKSHOP ON DIGITAL SOIL MORPHOMETRICS

1-4 June 2015. University of Wisconsin-Madison, USA

Digital Soil Morphometrics
IUSS Working Group



The format will be symposia with several keynotes followed by 5-10 minutes presentations and ample time for discussions. The four conference topics include:

- Soil profile attributes: horizons, texture, colour, structure, moisture, mottles, consistence, carbonates, rock fragments, pores, roots, and all physical, chemical or biological properties
- Soil profile imaging
- Soil depth functions
- Use and applications (environmental consultants, soil classification)

Agenda

Sunday 31st May Welcoming reception 17.00-21.00

Monday 1st June Fieldtrip (bring your tool!)

Tuesday 2nd June Symposium day 8.30-17.00 (19.00-23.00 conference dinner)

Wednesday 3rd June Symposium day 8.30-17.00

Thursday 4th June Symposium day 8.30-14.00

Registration

Registration fee is \$350 (including book of abstracts, morning coffee, lunches and afternoon drinks). Attending the fieldtrip costs \$75 and the conference dinner is also \$75. The dinner will include the best dance band of the whole of Wisconsin (well, that is what we think).

<http://digitalsoilmorphometrics.org/inaugural-global-workshop-2015/>

CONFERENCE ON THE ENVIRONMENTAL ARCHAEOLOGY OF EUROPEAN CITIES

May 27-29, 2015. Royal Belgian Institute of Natural Sciences, Brussels, Belgium. Call for papers



RATIONALE AND AIMS. In the last decades there has been a significant increase in the use of environmental studies within urban archaeological contexts. Today, it can be stated that the full potential of the existing environmental archaeological approaches is not yet always reached. Therefore, the aim of the present conference is to assemble researchers (archaeologists, historians, geoarchaeologists, physical anthropologists, archaeozoologists and archaeobotanists) working on urban archaeology to share their experiences, to explore the development of their disciplines and to discuss how results from different approaches can be more fully integrated.

More information on the program, registration, abstract submission and practicalities can be found at the conference home page:

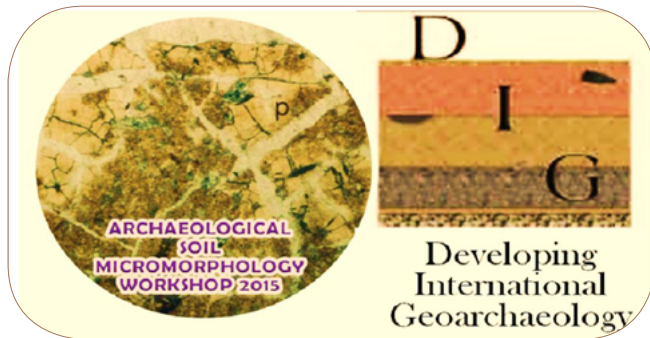
<https://www.naturalsciences.be/en/museum/agenda/item-view/607>.

Please note that abstracts (300 words) for oral or poster presentations should be submitted before 18 November 2014 through following link:

<https://www.naturalsciences.be/science/ceaec/form>.

DALRYMPLE'S WASM AND DIG2015 CONFERENCE

Third Circular. Dalrymple WASM: Department of Chemical and Geological Sciences of Cagliari University. 5-8 June. DIG2015: Sassari University, Department of Architecture and Design in Alghero, 9-12 June



Deadlines

- Dalrymple WASM registration by experienced micromorphologists and micromorphology post-docs: 15 March 2015
- Registration opens for any other applicants for the WASM: 16-30 March 2015: Priority for micromorphology researchers and PhD students who register by 25 March
- Abstract submissions for DIG2015: 15 March 2015
- Registration for DIG2015: Deadline for those who present papers or posters: 15 March 2015. Later registrations will be accepted, but only for attendance without presenting a communication.
- Registration for DIG2015: Deadline for those who do not present papers or posters: 30 April 2015

Registration information for Dalrymple WASM

Before sending payment, please write us to dig2015submissions@gmail.com to ask if you have a place.

Registration for DIG2015

Registration – please send us (to DIG2105submissions@gmail.com) the registration form together with a copy of your receipt for payment. Please do not send payment without the registration form.

Excursions

- On 8 June, just before DIG2015, there will be a half day excursion to the site of Fordongianus (<http://www.forumtraiani.it>).

- The DIG2015 conference will be followed by another excursion to the Phoenician-Punic-Roman site of Tharros (see <http://www.tharros.info/ViewSites.php?cat=100&lng=it> and <http://www.sardegna.cultura.it/j/v/253?s=21268&v=2&c=2489&c1=2125&t=1>) and we will visit the field site of the finding of the “Giants of Mont’e Prama” (<http://www.theguardian.com/world/2014/mar/17/giants-of-monte-prama-sardinian-sculptures-display>), and the Giants themselves on display of Cabras Museum (<http://www.comunedicabras.it/vivi-cabras/museo-e-area-archeologica-di-tharros/index.aspx?m=53&did=285>)

Registration forms and more information about presentations and fees can be found at:

<http://www.developinginternationalgeoarchaeology.org/7.html>

Additional information and questions should be directed to M Raimonda Usai:

dig2015submissions@gmail.com

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Found on trowelsandtrenches.com

