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IUSS Commission 1.6–Paleopedology
INQUA Paleopedology Working Group

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Paleopedology Website:
https://sites.google.com/view/paleopedology/home

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Cover photo: field discussion at the FIELD INTERNATIONAL WORKSHOP ON PALEOPEDOLOGY in Palenque, Mexico 2026, photo courtesy Lilit Pogosyan.

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Preface

Dear Friend of Paleopedology,

Welcome to the May 2026 Newsletter!

Our commmision/working group has been very active this year. We had a field Paleopedology Commision Workshop and we had significant publication achevements. More is planned for future! We are glad to share with you our news, please do not forget to share with us yours!

Best wishes,

Lilit Pogosyan

As you may already know, elections for Commission officers are currently underway. For the Chair position, Commission 1.6 has nominated **Dr. Francisco Sérgio Bernardes Ladeira** (Associate Research Professor, Institute of Geosciences, State University of Campinas, Brazil).

Two candidates have been nominated for the Vice Chair position:

- **Dr. Brad Sion** (Desert Research Institute, Reno, NV, USA), nominated by the current Commission officers
- **Dr. Ingrid Horák Terra** (Federal University of Jequitinhonha and Mucuri Valleys, Brazil), nominated by the Brazilian Society of Soil Science

According to the IUSS By-Laws (October 2024 revision), Full Members (National Societies) had until the end of April to complete their national voting and report their final preferences to the IUSS Secretariat. The winners will be notified by the end of May by the IUSS President, and the results will be announced via direct communication to Full Members, as well as through the IUSS Alert, Bulletin, and website. We will also share this information via paleopedology@googlegroups.com mailing list.

Recent activities

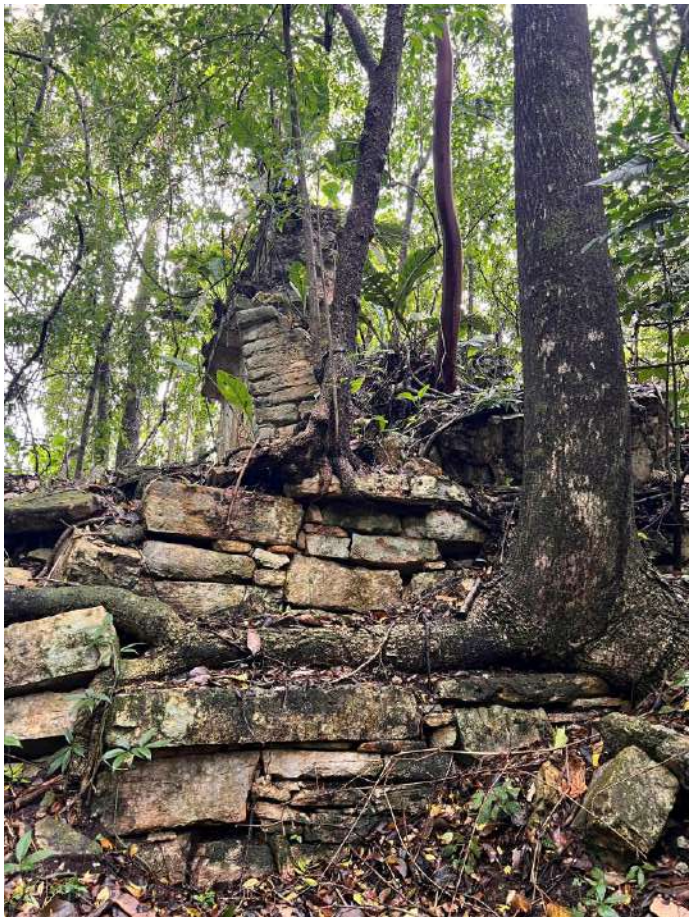
Field International Workshop on Paleopedology

PALENQUE-MÉXICO

"Ancient soils, living landscapes"

(by Cezary Kabala)

Although the main goal of paleopedological symposia is to discuss the genesis of palaeosols and polygenetic soils, in the context of changing environmental conditions and human influence, these symposia are also unique occasions to test the universality of soil classification systems. An international symposium 'Ancient soils, living landscapes" in Palenque (Chiapas state in the tropical part of Mexico) organised in February 2026 by a consortium of Mexican and supporting American universities, under the auspices of IUSS, created an excellent opportunity to achieve all these goals. The field part of the workshop began with soil profiles located in the surroundings of the famous archaeological site in Palenque, one of the most important cities-states of Mayan civilisation (the Classic period). It may seem surprising, but the soils formed on the ruins of Mayan buildings, from more than a thousand years ago, ancient European Ephesus or Paphos.



Polygenetic soils located on slopes near to and below the Palenque site document the high activity of slope processes, probably driven by human intervention: landscape modelling, deforestation, and soil cultivation on the slopes. Surprisingly, both modern (surface) and buried soils often met the criteria for Phaeozems because of their thick and dark-coloured mollic horizons, rather unusual under tropical conditions. The most astonishing thread of discussions in Palenque was the genesis of travertine covers and the presence of their fragments in soil profiles. Undoubtedly, this topic is worth further detailed and interdisciplinary study. .

Time, climate and vegetation transform Mayan constructions into Urbic Technosols. Photo courtesy: C. Kabala

The soils of the wetlands surrounding the Budsilhá site, near the border with Guatemala, although obviously belonging to Gleysols, were surprising with their thick mollic horizon and the accumulation of secondary gypsum, even in the form of large crystals. Explaining their complex genesis required considering historical, geomorphological, and hydrological contexts. The soils in the karst highlands in this region were similarly unusual. We expected tropical terra rosa, while we found Calcaric Phaeozems with a uniquely thick (Pachic) and dark and structural (Chernic) humus layer, underlain with a thick cambic horizon, indicating a high modern activity of geomorphological phenomena and pedogenic processes, including intense accumulation of humus.

Urbic Technosol in the archaeological site Palenque, with Lilit Pogosyan
Photo courtesy: C. Kabala

The catena of soils on the various age terraces of the Usumacinta River, close to the city Emiliano Zapata, provided a possibility to identify relics of old and truly 'tropical' soils of this region, Chromic Acrisols, and to trace their modern transformation toward Vertic Gleysols. The soils of the youngest river terraces were characterised by a specific mineralogy, able to be explained only in a regional context of the geological formations occurring in the Usumacinta basin. These soils bore common traces of anthropogenic transformations related to a long-term history of human presence in the area.

A welded (polygenetic) Greyzemic Phaeozem (Solimovic) over Cambic Phaeozem (Prototechnic, Protovertic) in the vicinity of the archaeological site Palenque explained by Eizabeth Solleiro Rebolledo. Photo courtesy: C. Kabala

Non-tropical soils under tropical conditions of south-east Mexico (Budsilhá): divided by scale, Rendzic Phaeozem (left) and Calcaric Chernic Phaeozem (Chromic, Pachic, Solimovic, Bathycambic) in the karstic pocket (right). Photo courtesy: C. Kabala

Although opinions were sometimes expressed on the poor reflection of palaeosols in existing soil classification systems, in my opinion, the fourth edition of the WRB (2022) proved to be sufficiently effective in naming the current stage of development and the properties of polygenetic soils of tropical Mexico. The flexible rules and large selection of primary and secondary qualifiers made it possible to emphasise both the modern, relic, transitional, and anthropogenic characteristics of the soils. The doubts resulted from uncertainty about the recognition of the genesis or properties of soils, rather than about the correctness of their identification in the WRB classification.

A great thanks to Elizabeth Solleiro Rebolledo, Sergey Sedov, Daisy Valera, Lilit Pogosyan and the entire Mexican team for a sensationally prepared and conducted symposium and field workshop. Warm thanks are also due to all participants, both soil scientists and archaeologists, for providing the professional and multi-threaded discussions and creating a friendly atmosphere.

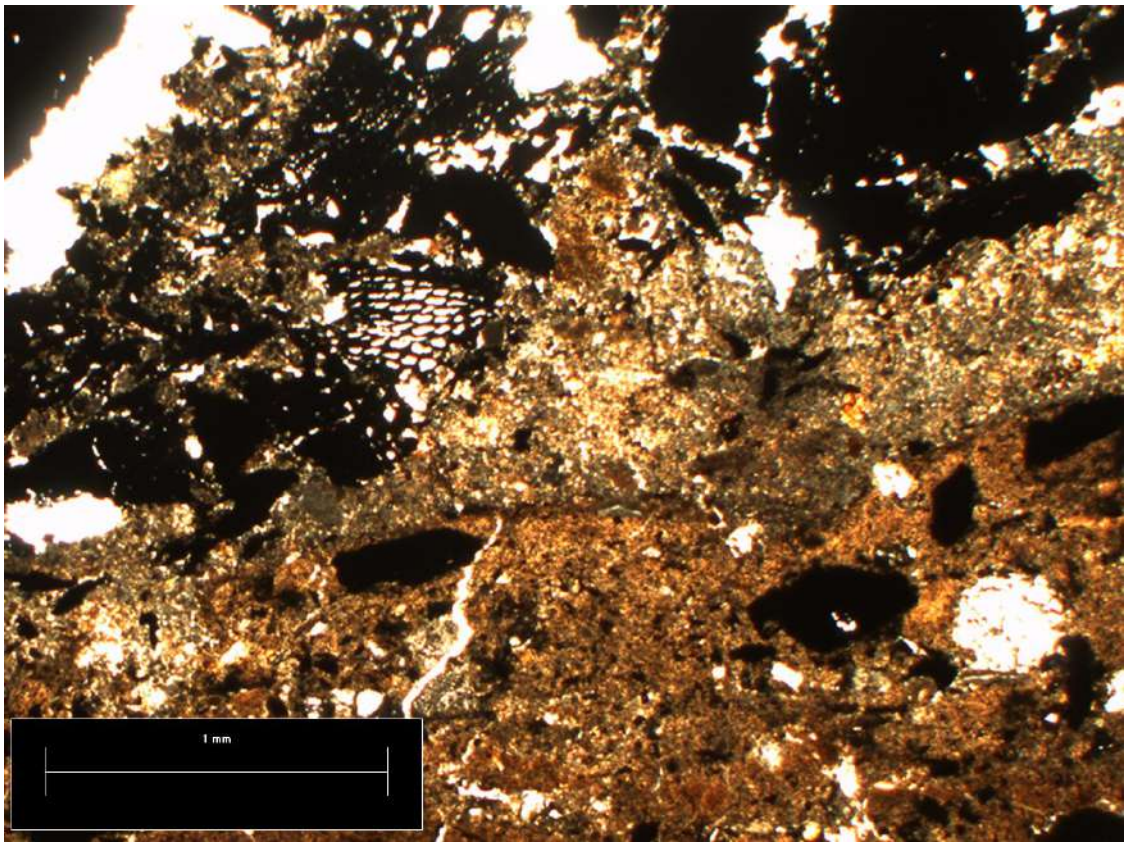
A complete overview of the soils presented during the workshop is available on the website of IUSS working group WRB: https://wrb.isric.org/workshops/mexico26.html

6th Virtual Micromorphology Meeting (ViMi6)

(by Axel Cerón González*)*

The 6th Virtual Micromorphology Meeting (ViMi6) was held on February 5–6, 2026, and was co-organized by the Vrije Universiteit Brussel (VUB) and the University of Cologne. The meeting brought together more than 120 participants from 20 countries and featured 20 speakers from 11 countries, primarily based in Europe and North America. The program included roundtables, breakout sessions, and live microscopy sessions. Highlights of the event included a keynote lecture by Richard MacPhail, a roundtable on the concept of soil memory led by Maria Bronnikova, and the presentation of the new IUSS Digital Soil Thin Sections Working Group by Richard Heck.

A joint session on quantitative soil micromorphology was organized by early-career researchers (ECRs), including Tania González (2022 IUSS Young Micromorphologist Awardee) and Lilit Pogosyan (2026 IUSS Dan Yaalon Medal recipient), showcasing emerging ECR leadership within the community. The ViMi6 Prize for the best student photograph was awarded to Thania Garcia Zeferino.



The photomicrograph comes from a sequence of floors, fills, and firms at the Major Temple (of the Mexicas) in Tenochtitlán, Mexico City. It shows fragments of horizontally arranged charcoal, embedded in a light brown soil matrix containing quartz, and below that, soil with evidence of burning. The charcoal belongs to the Quercus specie, abundant around the Basin of Mexico. This arrangement is significant because infant skulls were put on top of these charcoal fragments, suggesting that the skulls were burned and offered as rituals. Furthermore, the arrangement marks the cultural limit and natural soil where the fragments were placed at the archaeological site. Photo courtesy: T. Garcia Zeferino

Future events and activities

The 23rd World Congress of Soil Science

(by Maria Bronnikova)

The following paleopedology-related sessions have been scheduled for the 23rd World Congress of Soil Science in Nanjing:

· Session 101002 – Micromorphology as a Tool for Understanding the Evolution of Soils and Environments in Natural and Human-Impacted Landscapes – a joint session organized by Commission 1.1 (Soil Morphology and Micromorphology) and Commission 1.6 (Paleopedology), chaired by Daniela Sauer and Fabio Terribile. The session will take place Tue, 9 Jun 2026, 09:00–11:00 AM (CST), and 11:30 AM–12:30 PM (CST)

Sessions 106001 and 106002 – Paleosols as Memory: Transdisciplinary Insights into Changing Paleoenvironments across Geological Timescales and Traditional and Novel Concepts, Approaches, and Methods in Studying the Past Genesis of Soils and Soil-Sedimentary Systems – have been merged into Session 106003, led by Francisco Ladeira and Xue-Feng Hu. This session is scheduled for Monday, June 8th, and will include two 2-hour time slots. The program has been arranged to preserve the original focus of both sessions:

o 1:30–3:30 PM: classical paleosol studies, including regional case studies

o 4:00–6:00 PM: approaches and methods

As is our usual practice, we plan to organize a special issue as a follow-up to these sessions. It will initially be open to presenters, with the possibility of a broader open call for contributions.

With support of IUSS Division 1 there will be an award of $300 for the best ECR oral presentation and $200 for the best ECR poster, for further information please contact session organizers. ECR presenters participating in both sessions organized with the involvement of Commission 1.6 are eligible for the competition.

Save the date!

Come to the Pantanal, Brazil between September 27th and October 2nd, 2027

XVI International Symposium and Field Workshop on Paleopedology – 2027

(by Francisco Sérgio Bernardes Ladeira and Aguinaldo Silva)

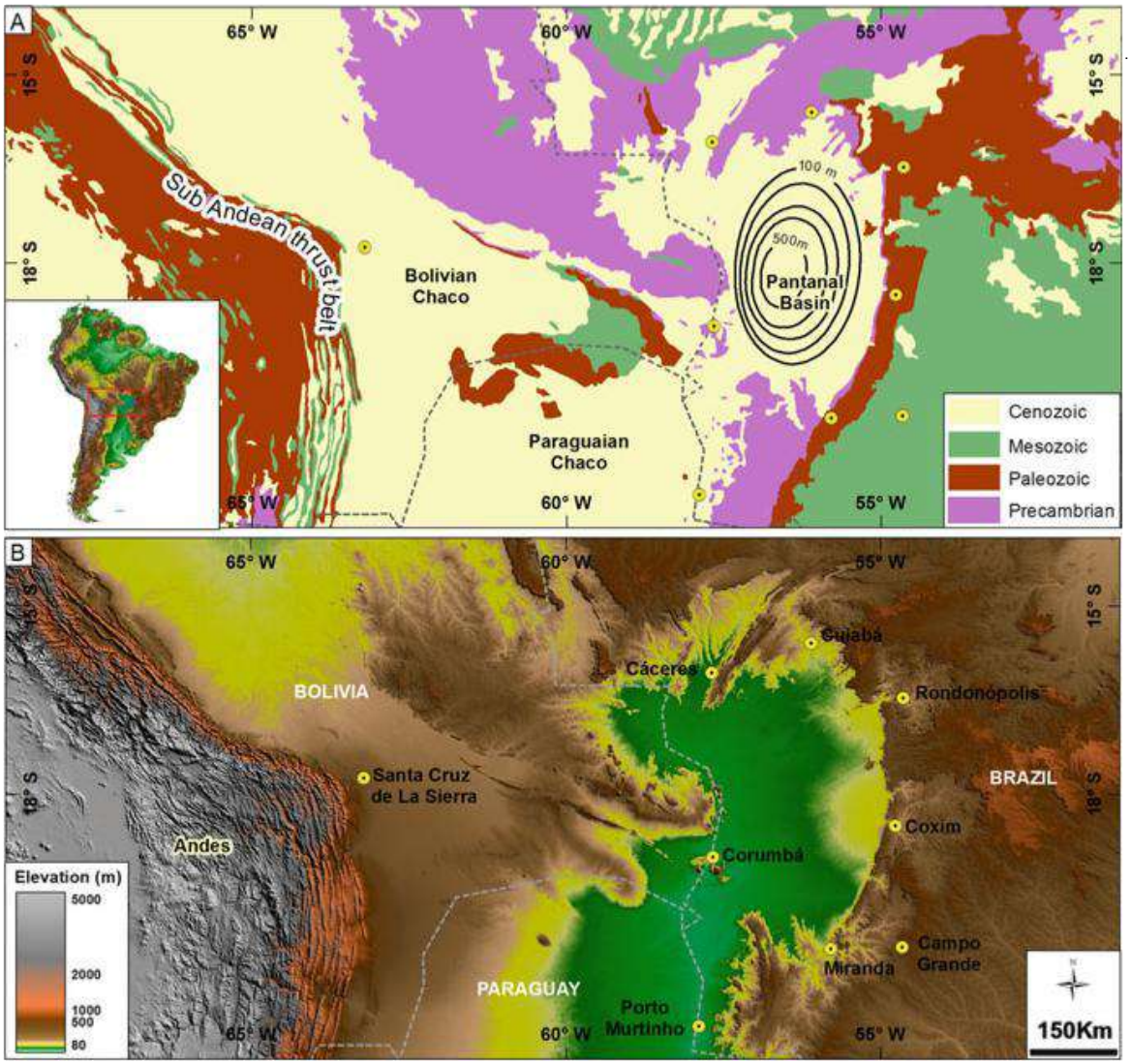
More detailed information, as well as organizers and sponsors, will be available on the website https://www.ige.unicamp.br/pedologia/ on August 15th, 2026.

The present communication aims to invite the paleopedological community to reserve the period from September 27th to October 2nd, 2027, when the XVI International Symposium and Field Workshop on Paleopedology – 2027 will be held in the Pantanal, in the state of Mato Grosso do Sul, Brazil. The area selected for the field activities is internationally recognized as one of the most relevant for wildlife observation, and additionally features remarkable exposures of soils and paleosols of high scientific interest.

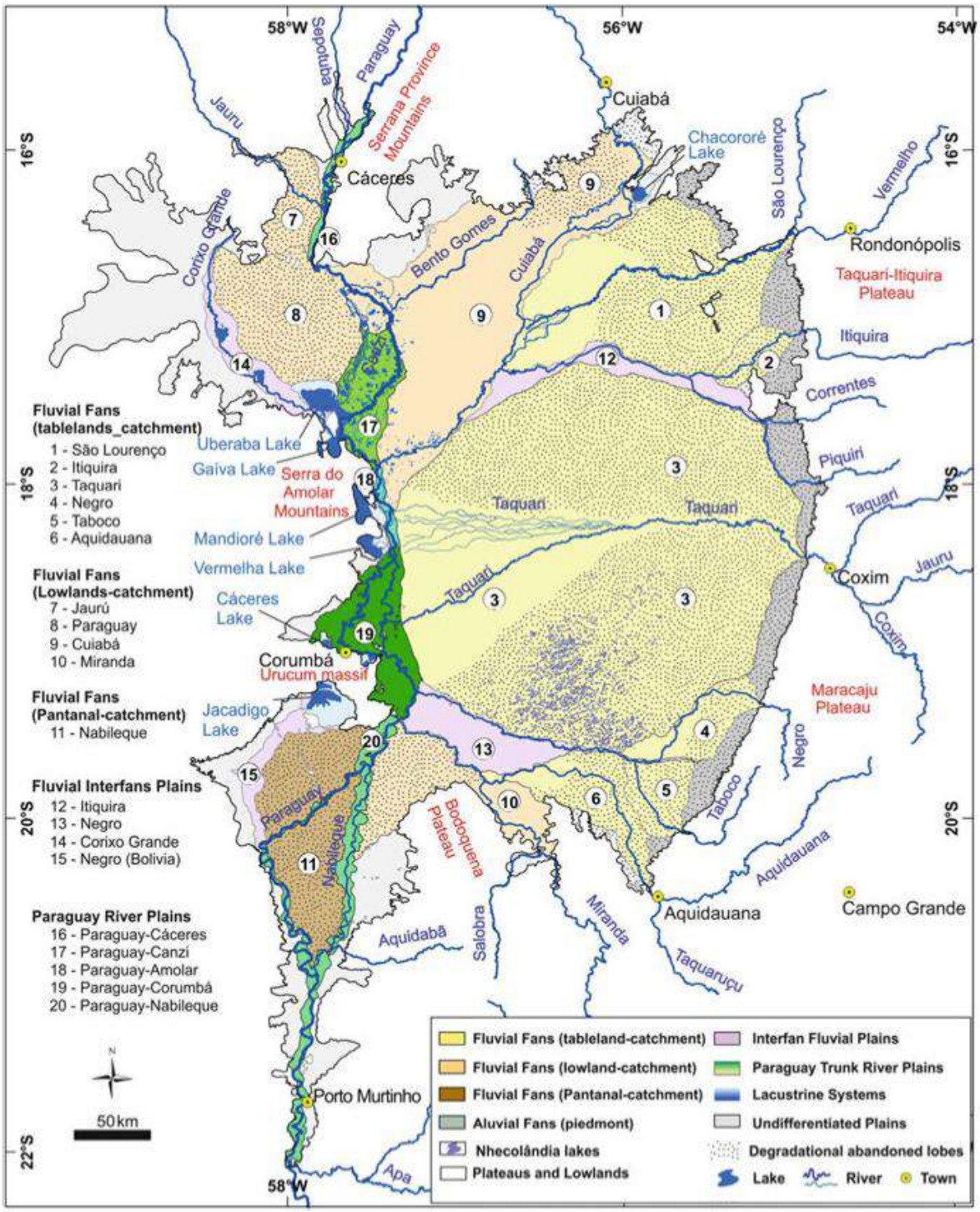
Common fauna in field areas. Photo courtesy: F. Ladeira and A. Silva

The Pantanal is characterized as a tectonically active Quaternary sedimentary basin, encompassing approximately 150,000 km² of seasonally flooded areas, and is one of the largest continuous wetlands on the planet (Por, 1995; Assine, 2003).

The main depositional environments of the region are represented by extensive fluvial fans (megafans), which differ according to their sediment source areas and play a key role in shaping the Pantanal landscape. Among these systems, particular emphasis is given to the megafans located along the eastern margin of the basin, characterized by their large dimensions, with catchment areas situated on plateaus developed over Paleozoic–Mesozoic deposits of the Paraná Sedimentary Basin.



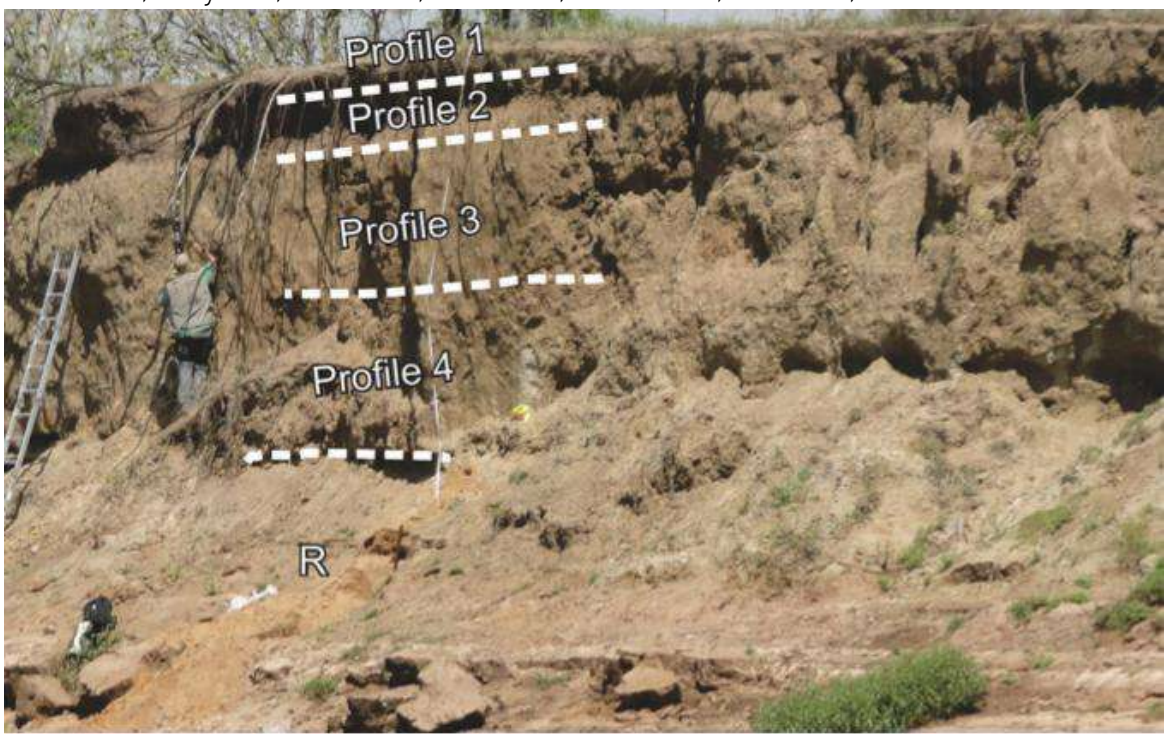
Location of the Pantanal Basin (Assine et al. 2015)

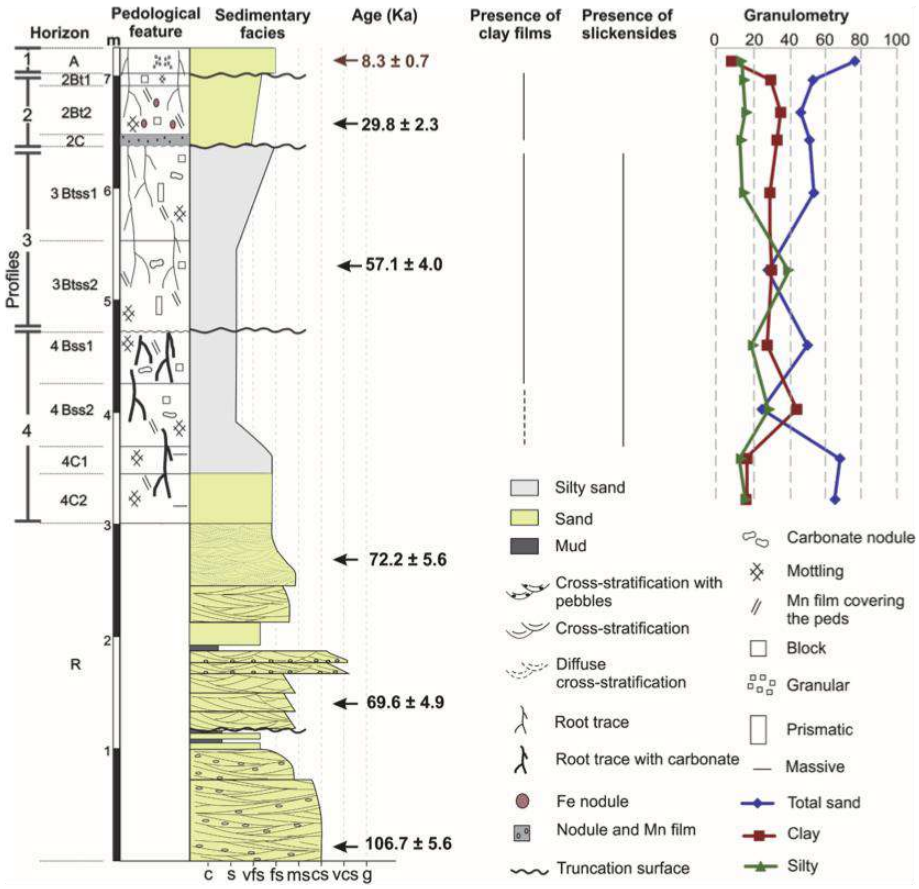


Depositional tract of the Pantanal Basin (Assine et al., 2015)

The morphology of these megafans results from continuous depositional dynamics, marked by the successive construction and abandonment of sedimentary lobes. The landscape is predominantly composed of Pleistocene deposits, exhibiting a complex network of superimposed distributary paleochannels. During the Holocene, these systems were reworked by meander belts entrenched within incised valleys, a process that favored the formation of extensive outcrops where soils, paleosols, and sedimentary deposits can be observed in an integrated manner (Assine et al., 1997; Assine, 2003; Assine et al., 2015).

Exposures along river margins record a sedimentary and pedological history that may extend back approximately 130,000 years, revealing a wide range of environmental changes. This setting provides a unique opportunity for detailed analysis of the relationships between pedogenetic and sedimentary processes. Among the main types of soils and paleosols identified in the region are Vertisols, Planosols, Gleysols, Calcisols, Fluvisols, Arenosols, Luvisols, and Acrisols.





Profile of an outcrop in the Aquidauana River (Ladeira et al. 2022). Photo courtesy: F. Ladeira.

In light of the above, the scientific community is cordially invited to participate in the XVI International Symposium and Field Workshop on Paleopedology – 2027. The activities will take place in three municipalities in the state of Mato Grosso do Sul: Campo Grande, where oral and poster presentations will be held; Aquidauana, with field visits to paleosol profiles along the Aquidauana River; and Corumbá, located on the border with Bolivia, with field activities along the Paraguay River.

Soil, paleosol, and deposit exposures in the Paraguay River region. Photo courtesy: F. Ladeira.

Regional tourism:

https://www.caiman.com.br/en/caiman/

https://visitbonito.com.br

References for learning a little about the Pantanal:

Assine, M.L., Soares, P.C., 2004. Quaternary of the Pantanal, west-central Brazil. Quat. Int. 114, 23–34.

Assine, M.L., 2005. River avulsions on the Taquari megafan, Pantanal Wetland, Brazil. Geomorphology 70 (3-4), 357–371.

Assine, M.L., Corradini, F.A.L., Pupim, F.N., Mcglue, M.M., 2014. Channel arrangementsand depositional styles in the São Lourenço fluvial megafan, Brazilian Pantanalwetland. Sediment. Geol. 301, 172–184.

Assine, M.L., Merino, E., Pupim, F.N., Macedo, H.A., Santos, M.G.M., 2015. The Quaternary alluvial systems tract of the Pantanal Basin, Brazil. Brazil. J. Geol. 45 (3), 475–489.

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Ladeira, F.S.B., Mescolotti, P.C., Pupim, F.N., Faria, L.M.D.M., M.L. Assine. M.L. 2022. Paleosols record dry and humid paleoenvironments during the Upper Pleistocene in the Brazilian Pantanal, CATENA, 212 (2022) 106113.

Nascimento A.F.; Furquim S.A., Graham R.C., Beirigo R.M., O. Junior J.C., Couto E.G., Vidal-Torrado P. 2015. Pedogenesis in a Pleistocene fluvial system of the Northern Pantanal - Brazil. Geoderma, 255:58-72.

Por, F.D. 1995. The Pantanal of Mato Grosso (Brazil) - World's Largest Wetlands Dordrecht, The Netherlands, Kluwer Academic Publishers, 122p.

XXII INQUA Congress 2027

Quaternary Science As Societal Services

https://www.inquaindia2027.in/

in Lucknow, India

January 28 - February 3 2027

Paleopedology Working Group have submitted the session S_059 – Paleosols as indicators of past environments and human impacts Leaded by Brad Sion, Francisco Ladeira, Maria Bronnikova and Elizabeth Solleiro Robolledo.

Session description:

Paleosols have long been used to infer past climate and human behaviors and impacts, making them invaluable records for evaluating potential effects of future societal needs under changing environments. Studies of chronologies, macro- and micromorphology, geochemical characteristics, and biomarkers in variable paleosol sequences, including those in archeological contexts, have significantly improved our understanding of the relevance and utility of soils as societal resources. This session is intended to showcase ongoing efforts to advance community understanding of the relationships between past climates, land uses, and human activities in soil records, and to use these records to forecast future outcomes of reciprocal interactions among humans, soils, and the environment. As such, we invite studies that highlight the rates, styles, and timing of soil development from diverse geographic settings which enable interpretations of these characteristics to changing societal requirements.
The submissions are already closed; further important dates are as follows:

15 May 2026	Notification of acceptance of abstracts
30 May 2026	Request for financial support opens
30 June 2026	Early bird and field trip & workshops registration opens
15 July 2026	Second circular
30 July 2026	Request for financial support closes
30 July 2026	Formal notification of financial support
30 August 2026	Early bird registration closes and field trip registration closes
1 September 2026	Regular registration and accompanying person registration open
30 September 2026	Deadline for payment of fees to secure presentation
30 October 2026	Regular registration closes
30 November 2026	Third circular
Up to the closing date of the Congress	Delayed and onsite registration continues

Save the date!

Virtual Micromorphology 7 (ViMi7) and IUSS Digital Soil Thin Section Collections Working Group

Joint hybrid event, May 2027 at the University of Guelph, Canada

(by Richard Heck (IUSS DSTSC WG) and Sean Glasshoff & Lilit Pogosyan (ViMi7))

More detailed information will be available in June 2027 after the 23rd World Congress of Soil Science

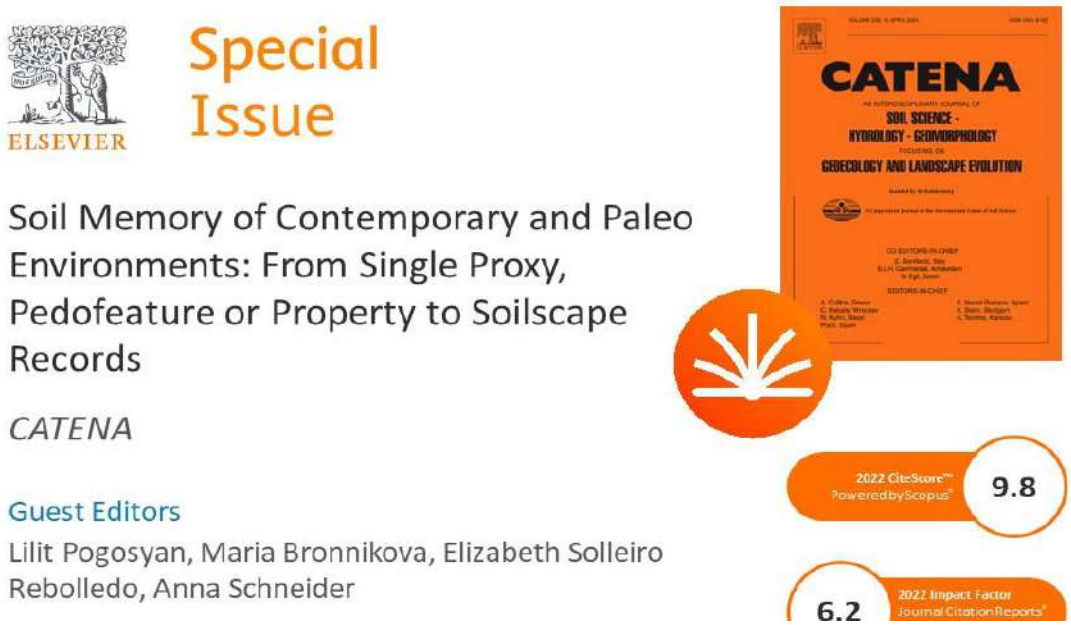
The goal of the IUSS Digital Soil Thin Section Collections Working Group is to establish an international framework for the digitization, characterization, archiving and sharing of soil thin sections collections. This event is planned for on-site participation.

If you are interested to participate, please help us by completing this 1 minute survey by May 15th:

https://docs.google.com/forms/d/1tLumruts8yE8Wue4yGURKKs83fjQr6-2xDEq0bE_Y3I/viewform?edit_requested=true

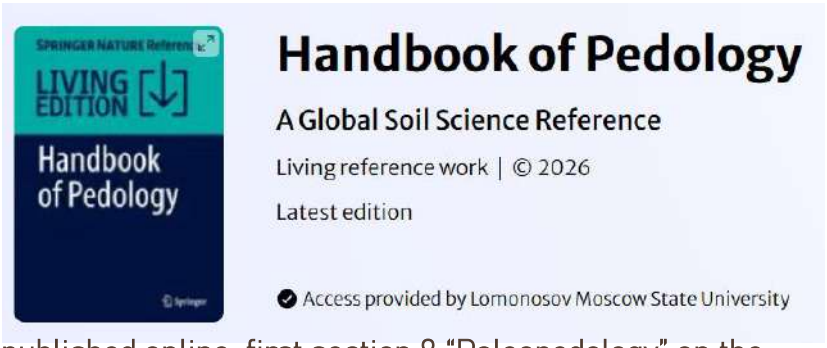
ViMi7, as all previous ViMis, will be planned for international on-line participation. We will share the survey for topics proposal later.

Publication activities



Special Issue "**Soil Memory of Contemporary and Paleo Environments: From Single Proxy, Pedofeature or Property to Soilscape Records**", edited by Lilit Pogosyan, Maria Bronnikova, Elizabeth Solleiro Rebolledo and Anna Schneider has been published recently in Catena journal. This special issue is a tribute to *Victor O. Targulian*, a visionary author of seminal theoretical works in pedology and one of the founders of the Soil Memory concept. It contains 33 research manuscripts that include contributions related to the conceptualization of the Soil Memory approach, Pre-quaternary paleosols studies, loess-paleosol sequences, black earth and dark soils studies, peat soil´s records and geoarchaeological research; and the editorial note that tracks the evolution of soil memory concept itself. These contributions have a broad geographic scope as they cover soil studies in 15 countries, in a timeframe from Upper Cretaceous to the end of Holocene.

We kindly invite to read the new publications of the Special Issue:
https://www.sciencedirect.com/special-issue/10Z2P0RKKRT



Springer Nature have been published online-first section 8 "Paleopedology" on the publication platform SpringerLink (https://link.springer.com/referencework/10.1007/978-3-031-91419-5).

Section editor: Alexander Makeev, Department of Soil Science, Moscow State University. The section is a part of Handbook of Pedology. A Global Soil Science reference (Editor: Ahmet Ruhi Mermut, Department of Soil Science, University of Saskatchewan, Saskatoon, Canada).

The fundamental concepts and principles of paleopedology, its relationship with Life and Earth sciences, methods for studying paleosols, and the evolution of the pedosphere in Earth's geological history are discussed. An international group of experts contributed to the volume's preparation.

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- **Basic Definitions and Core Concepts in Paleopedology** (Alexander Makeev)
- **Biomarker Analyses as Tool in Paleopedological Research** (Michael Zech, Roland Zech)
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- **Introduction to Paleopedology** (Alexander Makeev)
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- **Loess-Paleosol Sequences in the East European Plain and Western Siberia** (Alexander Makeev)
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- **Paleosols in the Quaternary** (Alexander Makeev)
- **Paleosols of Colluvial Pedosedimentary Sequences** (Alexey Rusakov)
- **Paleosols of the Volcanic Geosystems** (Sergey Sedov, Elizabeth Solleiro-Rebolledo)

We would also like to draw your attention once again to the special issue in Soil Use and Management titled "Applied Pedology: Practical Solutions Across a Variety of Disciplines and Issues." This initiative emerged following the Division 1 meeting in Canada and was led, among others, by Commission 1.6.

https://bsssjournals.onlinelibrary.wiley.com/hub/14752743/call-for-papers/si-2025-001306

This special issue reflects the growing recognition that pedologists worldwide need to raise awareness within the scientific community, among stakeholders, and the wider public about the importance of fundamental knowledge of soils—as complex, environmentally driven systems that record environmental change, buffer negative impacts, and serve as a critical resource for sustainable development and human well-being.

We warmly invite contributions that address applied pedology across disciplines. Topics of interest include, but are not limited to:

- Critical role of pedology for understanding landscape evolution;
- Understanding soil carbon dynamics through a pedological lens;
- Soil functions research informed by pedological concepts;
- Pedology for geoarchaeology — practical applications;
- Utility of soil classification in the interpretation of climate change impacts;
- Pedological tools to support agricultural research;
- Pedology, land use and conversion;
- Pedology underpinnings of effective large data-based soil research, in agriculture, forestry;
- Pedology for understanding soil degradation risks and remediation options;
- Pedology for understanding soil hydrology;
- Pedology informing the management of extreme and marginal lands (permafrost, saline, arid, acid, etc.);
- Pedology in urban environment;
- Pedology for soil carbon sequestration strategies;
- Pedology as a tool to enhance human health.

This special issue is part of the IUSS initiative "Research Forum for the 2025–2034 Decade of Soil Sciences for Sustainable Development (DSSSD)."

We invite you to submit your work by September 1, 2026. We believe your expertise would be a valuable contribution and encourage you to consider submitting a manuscript. For further details, please refer to the Call for Papers.