Paleopedology Newsletter is a joint initiative of the IUSS Commission 1.6–Paleopedology and INQUA Focus Group QUASAP

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Cover photo: Buried soil (age approx. 3000 kyr) in the highlands of Russian Altai (photo courtesy: Maria Bronnikova)
Contents

Letter from Commission Officers 4

INQUA International Focus Group QUASAP 5

Past Conferences & Meetings 6

Major Activities: 2014-2018 6

Reports 8

Upcoming Conferences & Meetings 27

New Publications 38

Epilogue of a PhD Thesis 42

In Memoriam of Ryszard Mazurek (1970-2018) 45

Editorial Epilogue 47

The Last Page 48
Dear Paleopedologists,

First, we would like to express our praise and gratitude to the former officers of our commission: Daniela Sauer (Chair), Sergey Sedov (Vice Chair) and Alexander Makeev (Secretary), who greatly contributed to the present state of the Commission 1.6–Paleopedology, which is currently one of the most active commissions of the IUSS Division 1 Soils in Space and Time. Their great professional and personal experience, inspiration, and eager activity have maintained both the high scientific potential and tradition of the Commission.

In the beginning of our term as a commission board, we declare our motivation to continue all previous traditions and advance the initiatives of our predecessors. We aim to keep up the tradition of regular meetings of Commission 1.6, especially field workshops. We consider joint time in the field as a most exciting and necessary activity. Paleopedology is to a great part a field science in which field meetings have proven to be very fruitful for our evolution as a scientific community. We also intend to enhance and widen interactions with other commissions of Division 1. Traditionally, the Paleopedology Commission has the strongest interrelations with Commission 1.1–Morphology and Micromorphology. Joint meetings have always been beneficiary for members from both commissions thus we wish to continue this custom.

We will head for integration with INQUA and EGU communities related to paleosols (and paleoenvironments) by participating in their ongoing events and activities. This will give us an opportunity for promoting paleosols as a valuable paleoenvironmental record as well as for retrieving information from other disciplines for the benefit of our research. At the same time, we need to continue our work on developing multidisciplinary approaches in paleopedology.

We are also concerned in further supporting and developing studies related to pedo- and geoarchaeology. This involves anthropogenic paleosols and cultural layers as complex pedo-litho-anthropogenic systems. Here we need to reinforce our integration both with the (geo)archeological community and with other specialists in Earth sciences.

Best wishes,

Maria Bronnikova, Chair
Elizabeth Solleiro Rebolledo, Vice Chair
Tobias Sprafke, Secretary
INQUA International Focus Group QUASAP

QUAternary Soils And Paleosols (QUASAP) – Kinds and rates of soil-forming processes reflected in Quaternary soils and paleosols and their use as paleoenvironmental archives

What is the focus of the International Focus Group QUASAP?
QUASAP is a focus group under the umbrella of the INQUA Commission TERPRO. Its runtime is 2016-2019. Within the overall scopes of TERPRO, QUASAP focuses on the use of Quaternary sediment-Paleosol sequences as archives of regional environmental changes. Marine sediments and ice cores provide detailed records of global climatic trends, whereas the specific strengths of terrestrial sediment-Paleosol records are that; 1) they have a wide spatial distribution and thus enable the detection of regional spatial patterns in Paleoenvironmental conditions, and 2) they record not only the Paleoclimatic conditions but also the responses of landscapes to Paleoclimatic shifts. For instance, burial of a soil by a slope deposit may indicate that a climatic shift has reached a threshold at which a change from stable to dynamic land surface is initiated. Over the last years, QUASAP organized a series of field workshops, providing much time for discussions about the sediment-soil sections that were examined together. The final workshop will be organized in 2019 in Ghent (Belgium, see page 34). In addition to the usual presentations by participants and the field workshop, the final workshop will also include an introductory course in modeling soil formation of soils and Paleosols developed in loess.

Daniela Sauer
Past Conferences & Meetings

Major Activities: 2014-2018

1-6 September 2014: XIII International Symposium and Field Workshop on Paleopedology; Toruń, Poland (organizer: Michał Jankowski).

26-31 October 2014: Workshop “Soil-forming processes and their rates”; Desert Studies Center, Zzyzx, California, USA, including field trip in the Mojave Desert (organizer: Eric McDonald).

27 July - 2 August 2015: Sessions at INQUA Congress; Nagoya, Japan:

› “Interpreting terrestrial Paleoclimates with the help of Paleosols and Paleoweathering profiles” (conveners: Mohammed Rafi Sayyed, Daniela Sauer, Alexander Makeev).

› “Soil-forming processes and their rates” (convener: Daniela Sauer).

› “Combining lacustrine, Paleopedological and other Paleo-environmental archives” (convener: Daniela Sauer).

24-29 August 2015: Workshop “Soils and Paleosols of Brazil”; University of Campinas, Sao Paulo State, Brazil, including field trip (organizers: Alessandro Batezelli and Francisco Ladeira).

23-28 August 2015: 5th International School on Paleopedology; Ust-Kamenka, Siberia, Russia (organizers: Maria Dergacheva and Alexander Makeev).

17-21 October 2016: Session at Eurosoil 2016; Istanbul, Turkey: “Paleosols and polygenetic soils: What can they tell us about past environmental conditions and their duration, and in which ways may they affect present soil functioning and carbon sequestration?” (conveners: Daniela Sauer and Edoardo Costantini).

27 November - 5 December 2016: Session at the 15th International Conference on Soil Micromorphology; UNAM, Mexico City, Mexico: “Micro-Paleopedology” (convener: Daniela Sauer).
6-13 December 2016: Workshop “The Route of Humboldt - Rates of pedogenesis in the dynamic landscapes of Central Mexico: From young tephra of the Transmexican Volcanic Belt to the dunes of the Atlantic coast”, UNAM, Mexico City, Mexico, including field trip (organizers: Sergey Sedov and Elizabeth Solleiro).

23-28 April 2017: European Geosciences Union (EGU) General Assembly 2017, Vienna, Austria:

- Geomorphological and (Paleo-)pedological records of natural environmental factors and human impact (regular session).
- Environmental effects of past land-use changes - Paleoenvironmental reconstructions as tools for current environmental planning (public meeting).
- Reading soils from the Past (short course).


12-17 August 2018: Sessions organized at the 21st IUSS World Conference of Soil Science (WCSS), Rio de Janeiro, Brazil:

- C1.6.1 Human-environment interactions recorded in soils and Paleosols.
- C1.6.2 Soil memory: proxies for deciphering records of past environmental conditions in soils and Paleosols.
- C1.1.3 (Joint session with Commission 1.1) How to use micromorphology to understand Paleosols and polygenetic soils?

23-29 September 2018: The International Conference LoessFest2018: “Diversity of Loess: Properties, Stratigraphy, Origin and Regional Features” was held in Volgograd, Russia from
23 till 29 of September 2018 as a joint event of the Loess Focus Group and Ponto-Caspian Stratigraphy and Geochronology Focus Group of INQUA.

Reports

1-6 September 2014: XIIIth International Symposium and Field Workshop on Paleopedology in Toruń, Poland (organizer: Michał Jankowski)

The XIIIth International Symposium and Field Workshop on Paleopedology in Toruń included two pre-conference field trips, two days of oral and poster presentations and a two-day post-conference field trip.

Pre-conference field trips;

01 September – Monday;

› Toruń-Stawki (sequence of buried and exhumed soils in windblown sand area, archaeological site – Late Paleolthic settlement)

› Gąski (soils in and under Neolithic Kurgan)

› Wapienno (periglacial features in deposits of various glaciations)
• Biskupin (archaeological site – Lusatian culture settlement)

02 September – Tuesday;

• Ołoczyn (chronosequence of young podzolized soils, lateral podzolization)

• Dąbrówka (Black Earth – post-hydromorphous Chernozem)

• Wietrzychowice (archaeological site – Neolithic megalithic graves)

• Koźmin (Paleosol sequence and remnants of Late Glacial forest in alluvial sediments of the Warta river)

Symposium – Faculty of Earth Sciences, NCU, Toruń 3-4 September – Wednesday;

• Opening ceremony (Daniela Sauer, Zbigniew Zagórski, Michał Jankowski)

• In memoriam to Dan Yaalon; “The contribution of Dan H. Yaalon to paleopedology” (Danny Itkin)

Plenary session;

• New status of paleopedology for geosciences and biosciences (Alexander Makeev)

• Soil chronosequence studies – a useful tool for assessing soil forming processes and their rates in different environments (Daniela Sauer)

• MIS3 paleosols from ice margins to Eurasian loess belt: polygenesis, toposequences, zonality (Sergey Sedov, Birgit Terhorst, Svetlana Sycheva, Alexey Rusakov, Vladimir Sheinkman)

• Paleopedology problems of postglacial area in Poland (Michał Jankowski)

Oral session - Paleosols in postglacial landscapes;

• Calcareous and humus-containing pendants as a proxy of Holocene environmental changes in mountains of the South Siberia (Maria A. Bronnikova, A.R. Agatova, A.E. Cherkinskiy, I.G. Shorkunov, I.V. Turova).
New insights on the formation of periglacial cover beds in northern Hesse, Germany (Susanne Döhler, Bodo Damm, Birgit Terhorst, Christine Thiel, Manfred Frechen).

Morphology and properties of mineral soils covered by shallow peat mantle (Raimo Kölli, E. Asi, T. Tönutare, A. Astover, L. Szajdak).

Surface paleosols on Moscow glacial till in the center of the Russian plain (Alexander Makeev, Pavel Kust, Marina Lebedeva).

Pedodiversity and properties of paleosols formed during MIS3 within nearest periglacial zone of northeastern Europe (Alexey Rusakov).

**Oral session - Paleosols in aeolian deposits;**

Pushkina Stages of interglacial development of Ryshkovo pedolithocomplex (MIS 5e) on the Central Russia based on Paleopedological and biomorphic data (Svetlana Sycheva, Alexandra Golyeva, Polina).

Characteristics Comparison of Buried Reddish Paleosols with Exhumed and Human – affected Reddish Paleosols: An Case Study in West Liaoning Region, China (Qiubing Wang, Yinyin Zhang, Zhongxiu Sun, Chunlan Han, Zhenxing Bian).

Chronosequence of soil paleocatenas in inland-dune area of the Toruń Basin (Michał Jankowski).

**Oral session - Paleosols in alluvial, colluvial and marine environments and Pre-Quaternary paleosols;**


Transformations of the primary soil cover in different types of land use (Bogusława Kruczkowska).

The first findings of the MIS3 paleosols in the Middle Ob’ basin, Western Siberia (Vladimir Sheinkman, Sergey Sedov, Sergey Korkin, Elena Korkina).
› Paleosols and Paleoenvironments of the Upper Cretaceous in Triângulo Mineiro - Minas Gerais – Brazil (Diego Sullivan de Jesus Alves, Francisco Sergio Bernardes Ladeira).

**Oral session - Paleopedological issues in geoarchaeology;**

› Stable carbon isotopes ($\delta^{13}$C) of paleosols and megafauna fossils as paleoenvironmental indicators of the Pleistocene-Holocene in Mexico (Tamara Cruz-y-Cruz, Sergey Sedov, Rosa E. Tovar-Liceaga, Víctor A. Pérez-Crespo, Joaquín Arroyo-Cabrales and Pedro Morales-Puente).

› Properties of modern soils formed on the Late Bronze Age Muradymovo settlement site, Volga-Urals region, Russia (Alexandra Golyeva, Olga Khokhlova, Nickolay Sherbakov, Iia Shuteleva, Gulnara Obydennova).

› Anthropogenic changes in soils of selected archaeological sites of the Chełmno Land (Maciej Markiewicz).


› Paleosol of paleoenvironment and ancient human implications at Yangshao culture village site (Kenning Wu, Lisi Zha).

**Poster session;**

**Closing ceremony;**

**IUSS Paleopedology Commission business meeting;**

**Post-conference field trip;**

**05 September, Friday;**

› Lasek Bielański: sequence of Holocene soils in coversand

› Katarzynka: sequence of the Alleröd and the Neoholocene Paleocatenas

› Dobrzewice: Ochre soils – Holocene red-coloured soils
06 September, Saturday;

› Gaj: Polygenetic Luvisol

› Retno: Colluvial deposits as an archive of moraine landscape evolution

› Sumówko: Soils developed in lake deposits

› Kaldus: Neolith-Bronze-Middle Ages settlement complex

1) Sequence of Holocene soils in coversand at Lasek Bielański. 2) Alleröd paleosol at Katarzynka. 3) Soil at Dobrzejewice supposed to be enriched by organic matter through lateral water flow. 4) Soil developed in deposits of a shrinking lake at Sumówko.

After a welcome reception in the evening of Sunday (October 26) we had a one-day workshop at the Desert Research Institute in Las Vegas (Monday, Oct 27), where papers on soil development and paleosols from different parts of the world were presented and discussed.

In the evening of Monday (Oct 27) the group traveled from Las Vegas to the Desert Studies Center at Zzyzx, located in the Mojave Desert, near the Providence Mountains. Tuesday (Oct 28) and Wednesday (Oct 29) were devoted to soil formation in well-dated sequences of alluvial fans coming from the Providence Mountains.

On the first day, we examined soils on alluvial fans composed of sediments predominated by granitic rock, whereas on the second day we studied soils on alluvial fans of same ages but different parent material, namely sediments comprising volcanic rock and limestone. Eric McDonald introduced the general soil-forming processes in these arid environments, and the group compared and discussed soil formation in the two soil chronosequences on different parent materials.

Spending two days in this landscape and allowing enough time at each soil profile led to very intensive and deep discussions and helped the participants to develop a better
understanding of the landscape development and dynamics, the formation of the alluvial fans, major soil-forming processes taking place under the given environmental conditions, influence of past (at times more humid) climates on the soils, and the effects of differences in parent materials on soil formation.

After dinner in the evenings of Monday and Tuesday, we continued with additional presentations. These presentations focused on desert soils in the Mojave and other deserts, and on dating of parent materials of soil formation by using cosmogenics and luminescence.

On Thursday (Oct 30), the group traveled to Death Valley, with stops at Badwater Basin and Devil’s Corn Field, and lunch break at Furnace Creek Ranch. In the afternoon, we reached Panamint Valley, where we studied several soils formed in dated parent materials near the ghost town Ballarat, on the eastern flank of Panamint Valley.

We stayed overnight in Ridgecrest, SW of Panamint Valley and came back on the next day (Friday, Oct 31) to explore soils formed in dated parent materials on the western flank of Panamint Valley. Numerous shattered clasts, both in the soils and in the desert pavement, demonstrated impressively the results of physical weathering. Hydration/dehydration of salt crystals were assumed as main process of clast shattering; however, other possible processes were discussed as well. Especially the older soils (in the age range of 60-85 ka) had intensively reddish-brown colors and were characterized by distinct clay illuviation (compared to the younger soils that had created some discussion about presence/absence of clay coatings among the group). The older soils clearly reflected periods of more humid climate during Pleistocene.

Daniela Sauer

24-29 August 2015: Workshop “Soils and Paleosols of Brazil”, University of Campinas, Brazil (organizers: Alessandro Batezelli and Francisco Ladeira).

24-25 August, Pre-workshop excursion: Spatial variability of Podzols on Ilha Comprida, under the influence of soil age, relief and hydrology;

Ilha Comprida is a Holocene sandy barrier island. It is 3-5 km wide and 70 km long and stretches along the Cananéia-Iguape coastal plain. The climate is humid-tropical, with 2261 mm MAP. The island developed along a longitudinal vector (ENE-wards) and a transversal
vector (SES-wards) into a long and narrow island running parallel to the coastline. Along the south cliff, the age of parent material decreases from West to East. Soils in the inner part of the island are less well-drained than those exposed in the cliffs. The groundwater level under the swales between the beach ridges is high, and peat formation can be observed in places. The soil profiles exposed in the cliffs must have started forming as inland soils, thus under less well-drained conditions, too. They got under better drainage conditions when the retreating cliff got closer and finally cut through them. Well-developed Podzols with Ortstein occur especially in the western zones of the island that are characterized by high beach ridges separated by narrow swales, whereas less developed hydromorphic Podzols and Histosols occur in areas with lower beach ridges and wider swales. Apparently, interflow running down from the beach ridges, carrying abundant dissolved organic carbon (DOC) concentrates especially in narrow swales and leads to the formation of thick Ortstein horizons there. This effect is less pronounced in the wider, flatter ridge-swale systems further east.

Left; Western part of the south cliff of Ilha Comprida: The sharp, even E/Bh boundary indicates Podzol formation under poorly drained conditions. Right; Well-aerated Podzols like this one show an irregular E/Bh boundary, with white tongues penetrating into the Bh. Tongues develop due to preferential flow, e.g. along former tree roots.

27-28 August, Post-Workshop excursion: Paleosols in the Itaqueri Hill and Poços de Caldas region, including Ferricretes, Silcretes and Bauxite;

The first part of the post-workshop excursion focused on the typical paleosol sequence of the Itaqueri Hill region, studied by Ladeira and dos Santos (2006). It includes a sequence of Oxisol (Ferralsol) – Laterite (Ferricrete) – Silcrete. Several typical sections of this sequence were visited.
The second focus of the post-workshop excursion was on bauxite profiles in the Poços de Caldas area, at the boundary between the states São Paulo and Minas Gerais. Both, hill bauxite ("Bauxita de Serra") and field bauxite ("Bauxita de Campo") profiles were examined. Hill bauxite profiles occur in the higher areas of the plateau of Poços de Caldas; they contain thick bauxite horizons that are rich in aluminium. Field bauxite profiles occur in the inner part of the plateau; their bauxite horizons are not as thick as those of the hill bauxite profiles; they have a higher content of reactive silica compared to hill bauxite profiles. Groundwater has leached soluble elements from the field bauxite profiles.

6-13 December 2016: Workshop “The Route of Humboldt - Rates of pedogenesis in the dynamic landscapes of Central Mexico: From young tephra of the Transmexican Volcanic Belt to the dunes of the Atlantic coast" (organizers: Sergey Sedov and Elizabeth Solleiro, UNAM, Mexico)

The focus of this workshop was on soils and paleosols developed from / embedded in between tephra layers. This focus was chosen, because volcanic regions represent particularly valuable archives for studying both soil chronosequences and paleosols. The group examined a soil chronosequence and various tephra-paleosol sequences as well as sequences of coastal dunes with embedded paleosols. We roughly followed the route that Alexander von Humboldt took, when he visited and measured the largest volcanoes of New Spain, from January 20 till March 7, 1804.

› Day 1 (Dec 6): Registration of participants, welcome evening. Stay overnight in Mexico City.

Day 3 (Dec 8): Presentations at Institute of Geology, UNAM, Mexico City. Stay overnight in Mexico City.

Day 4 (Dec 9): Middle-Late Pleistocene tephra-paleosol sequence of Tlaxcala, covering about 900 ka.

Day 5 (Dec 10): Visit of the Cantona archeological site, built on & with volcanic rock. Along the road, soils and paleosols on volcanic materials of different ages were shown. Stay overnight Naolinco, Veracruz.


Day 7 (Dec 12): Dunes and paleosols of Palma Sola. The sequence covers approx. 100 ka, with 4 paleosols, the youngest with pre-ceramic artefacts. Stay overnight in Palma Sola.

Day 8 (Dec 13): Return to Mexico City. Tlaxcala paleosol sequence, (day 4).
The QUASAP Workshop in the Yukon Territory, Canada, took place in August 2018. The workshop focused on soils and Paleosols in cold climates that have not yet been in the focus of any earlier workshops of the group. It was perfectly organized by Paul Sanborn, with help from Chris Jackson (both from the University of Northern British Columbia, Prince George, Canada). INQUA supported the workshop through travel grants for four young scientists (Figure 1).

In the Kluane Lake area, we were able to observe active loess production, which was probably the most impressive experience of this workshop (Figure 2). In addition, we examined sites where Holocene loess covers had accumulated. Further topics included recent glacial drainage changes and soil patterns in a boreal grassland-forest mosaic. Other key study objects of the Yukon Workshop included a chronosequence of soils on progressively older glacial surfaces (Wisconsinan, penultimate glacial period, early Pleistocene). In this case, the scientific questions were: What rates of soil formation are observed under the cold climate of the Yukon Territories? Which influence of tephra and aeolian deposition can be observed?

In the Klondike Goldfields, we visited a formerly unglaciated area with upland soils in weathered bedrock, as well as old colluvium and early Pleistocene glacial outwash. This is a very special situation, because usually soil formation in cold climates started after deglaciation, at the Pleistocene-Holocene transition. The Klondike Goldfields offer a rather rare opportunity to answer the scientific question: How do soils in cold climates continue to develop if they have (much) more than 12000 years in time to continue developing? What weathering stages do they reach in which time-spans?

During a trip on the “Top of the World Highway” between Dawson and the U.S. border, which is above tree-line most of the time, we observed cryoplanation terraces, solifluction lobes and patterned ground (Figure 3), as well as strong control of soil formation and permafrost distribution by slope aspect. Thus, the group had the chance to study and discuss active geomorphological processes, which create features that also occur in Pleistocene Paleosols in temperate climates. The observation of these processes was very instructive for Paleoclimatic interpretation of the respective features in Pleistocene Paleosols,
e.g., of Central Europe and climatically similar regions.

Day 1 (Saturday, July 28): Participants arrive in Whitehorse, orientation meeting and dinner at Beringia Center, stay overnight in Whitehorse.

Day 2 (Sunday, July 29): Drive to Kluane Lake Research Station (KLRS), paper presentations at KLRS, stay overnight at KLRS.

Day 3 (Monday, July 30): Paper presentations at KLRS, local field trip at Kluane: Modern and Holocene loess production; recent glacial drainage changes; soil patterns in boreal grassland-forest mosaic, 8.00 pm return to Whitehorse.
Day 4 (Tuesday, July 31): Drive to Dawson City (~ 550 km), with 3 stops: Rough chronosequence of soils on progressively older glacial surfaces (Wisconsinan, penultimate glaciation, early Pleistocene), influence of tephra, aeolian deposition, periglacial processes, stay overnight in Dawson.

Day 5 (Wednesday, Aug 1): Drive on the “Top of the World Highway” (round trip ~ 200 km) between Dawson and U.S. border. Most of the route is above treeline, and provides great views of unglaciated landscapes similar to much of interior Alaska and eastern Siberia, with cryoplanation terraces, solifluction lobes, and strong control of soil formation and permafrost distribution by slope aspect, stay overnight in Dawson.

Day 6 (Thursday, Aug 2): Round trip ~ 200 km: Visit sites in the adjacent Klondike Goldfields: unglaciated uplands with soils formed in weathered bedrock and colluvium, and early Pleistocene glacial outwash, stay overnight in Dawson.

Day 7 (Friday, Aug 3): Return to Whitehorse, stay overnight in Whitehorse.

Day 8 (Saturday, Aug 4): Air departures for participants.
1-8 August 2018: IX International School on Paleopedology of Young Scholars in Siberia: “Paleosols as a Source of Information about Past Environments”

The International School on Paleopedology took place in Siberia (Novosibirsk – Altai, Russia). This time the event was dedicated to the 50th Anniversary of the Institute of Soil Science and Agrochemistry of the Siberian Branch of the Russian Academy of Sciences, which organized the School in 2010. Annually and traditionally the International School is being held at the Altai Region ("Volodarka" territory). This location was chosen for the event, first, because of common distribution of paleosols of different ages (early Pleistocene to Holocene), and second, because many forms of paleosols (buried, surface and exhumed) are represented.

Loess-paleosol series in the coastal outcrop of the Ob River (key area Volodarka)

The organization of this event was led by the Institute of Soil Science and Agrochemistry SB RAS, the National Research Tomsk State University, the Ural Federal University (Yekaterinburg), the Novosibirsk Pedagogical University, the Institute of Radiation Safety and Ecology of the NSC of the Republic of Kazakhstan; V.V. Dokuchaev Soil Society, and IUSS Commission 1.6–Paleopedology. 56 people have participated; 44 young students and 11 leading paleopedologists, as well as specialists of other disciplines from Russia, Germany,
Israel, Turkey, Kazakhstan. 15 lectures were presented, mainly regarding fundamental theoretical, methodological and applied issues of paleopedology. Maria Dergacheva and Vladimir Sheinkman conducted master-classes on the basic methods of field study of paleosols and the interpretation of research materials.

Among the young participants there were not only those who have already made their choice in favor of paleopedology, but also those who are engaged in solving other problems of soil science and the adjacent earth sciences, but they all are really interested in issues which can be solved with paleopedology. Although some participants did not present their own materials or reports this year, they all had the opportunity to listen to their colleagues’ reports and learn more about issues, objects and methods of paleopedology. More than fifteen presentations by the young participants of the IX International School were devoted solely to the issues of paleopedology. Some works have covered issues related to both modern and ancient soils, and many presentations reflected specific features of mineral and organic components of modern soils that formed under different conditions. All works have contributed to forming a basis for paleosol diagnostics and formation conditions and will
further contribute to the reconstruction of paleo-environments using the method of actualism.

These works represent a wide range of areas where research was conducted. They cover many regions of Russia, as well as areas of Germany, the Republic of Kazakhstan, South Korea and other countries.

In addition to traditional lectures on various issues and methods of paleopedology, leading scientists have contributed with lectures on some new topics. This year, for the first time, the collection of lectures included subjects such as: 1) Non-pollen palynomorphs in paleoecology (Ludmila Shumilovskikh, Germany), 2) Methodological features of studying paleosols within cities (Olga Bezuglova, Russia), 3) Utilizing stable isotopes in soil science and paleopedology (Ahmet Mermut, Turkey), 4) Exploring the question of “how is it possible to discover ancient soils in the Earth's crust?” (Vladimir Sheinkman, Israel), and 5) An original view on the systematics and role of biomarkers in paleopedology (Olga Nekrasova, Russia).

One series of lectures was devoted to particular issues of paleopedology. The lecture of Valentina Rykova (Russia) should also be noted as it represented the network of open resources on the evolution of soils and environments. All participants of the IX International School on Paleopedology received certificates with a list of attended lectures and master classes which they participated in. Traditionally, they were presented with monographs of famous scientists of paleopedology and other natural sciences, as well as publications in two languages (Russian and English) of some historical lectures given at the School throughout the years. The work of the IX International School ended with a fascinating excursion to the Mountain Altai on Teletskoye Lake. The X International School on Paleopedology for young Scholars in Siberia will be held in August 2019, traditionally, in the Altai at the “Volodarka” territory.

The Organizing Committee of the School will be glad to welcome you in Siberia!

On behalf of the Organizing Committee of the IX International School on Paleopedology for Young Scholars in Siberia,

Maria Dergacheva
The 2018 business meeting of Commission 1.6 took place during the 21st WCSS in Rio de Janeiro. That was the first commission meeting held on a beach! - we were not many, but very active. Daniela Sauer gave a short report on the commission activities during the previous inter-congress years (2014-2018). After which, a new commission board was introduced by Daniela. Some forthcoming events and future plans were briefly discussed. Following Daniela’s friendly idea, some national foods were spread out among the participants. Before this very “official” business meeting, the former and the new commission officers had their own separate meeting, where newcomers asked Daniela to share her great experience as a commission leader. Plans for future and further development strategy of commission 1.6 were discussed. Special attention was paid to forthcoming meetings and field workshops, publishing activities, renovation of the commission web site, and possibilities for reviving the tradition of commission newsletters.

While discussing our 21st WCSS experience, it is worthwhile to highlight the long and successful cooperation with Commission 1.1–Soil morphology and micromorphology. Therefore, a joint session for both commissions took place during the Congress. That session was dedicated to applying soil micromorphology in the study of Paleosols and polygenetic soils. It included four presentations; three of them dealt with various case studies and one presented a methodological approach to SEM studies of iron-rich
duricrusts. One of the case studies has been discussing archaeological cultural layers from the point of view of their genesis. A keen question which is important both for general understanding and for the practical interdisciplinary studies was raised again: Whether cultural layers should be considered as soils? or maybe sediments? or soil-sedimentary systems? Two other symposia organized by commission 1.6 (C1.6.1 Human-environment interactions recorded in soils and Paleosols, and C1.6.2 Soil memory: Proxies for deciphering records of past environmental conditions in soils), also contained a number of studies directly related to micromorphology. Such close links between commissions 1.1 and 1.6 definitely result from intrinsic logics of soil morphology and paleopedology development. Actually morphology and micromorphology are the key bases for understanding soil development, sequences of soil forming processes and soils of the past. As was well expressed in that joint session, and whenever we study soils in time, we desperately need a detailed morphological and micromorphological data. Thus, morphology and micromorphology of paleosols is a very productive branch of knowledge.

Maria Bronnikova

23-29 September 2018: LoessFest2018

The International Conference LoessFest2018 “Diversity of Loess: Properties, Stratigraphy, Origin and Regional Features” was held in Volgograd, Russia from 23 till 29 of September 2018 as a joint event of the Loess Focus Group and the Ponto-Caspian Stratigraphy and Geochronology Focus Group of INQUA. It had a broad international participation; besides Russia, colleagues from the China, Czech Republic, Denmark, Finland, Hungary, Iran, Serbia, the USA and a number of other countries, took part. A lot of young scientists presented their results, however, also “loess veterans”; A. Bronger and N. Bolikhovskaya attended the Conference. Among various research topics discussed in the scientific sessions of this event, clear favorites were: 1) Development of a detailed loess chronology using modern instrumental dating techniques and 2) Multiproxy approaches to the paleoenvironmental interpretation of the loessic sequences and tracing the provenance of silt materials.

Traditionally, study of paleosol levels comprise one of the key elements of loess research. Arnt Bronger presented his vision of loess correlation throughout Eurasia based on the pedological characteristics of buried soils – a synthesis of his tremendous half a century
long work. However the paleopedological topics were somewhat underrepresented at the conference. The concern about the decrease of interest towards paleopedological research within the Loess community led to the idea of organizing a joint meeting of the Paleopedology Commission and the Loess Focus Group in the future, supported by the Loess Group leader S. Markovic.

Field excursion to a loess-alluvial soil-sedimentary section on the Low Volga valley; Loess veteran Arnt Bronger visiting the section (right photo)

During the conference excursion, the colleagues from Moscow Lomonosov University T. Yanina and R. Kurbanov presented very interesting sections on the Low Volga valley. An interplay of eolian and alluvial sedimentation with the deposits of the Caspian transgressions as recorded in the very complex soil-sedimentary sequences. Paleosol levels look unusual for the loessic sequences being strongly affected by hydromorphism; they supposedly reflect paleoclimatic conditions as well as fluctuations of the Caspian Sea levels. The interdisciplinary team working at these sections is focused now on establishing a link between the local landscape evolution and global climate changes throughout Late Pleistocene. An important Middle Paleolithic site, Sukhaya Mechetka, was also introduced to the participants. The excursion finished at the impressive Memorial Complex of the Stalingrad Battle.

Sergey Sedov
Upcoming Conferences & Meetings

EGU General Assembly-2019, Vienna, Austria, 7–12 April 2019

EGU General Assembly gets more and more representative and wide-scope annual forum in geosciences. Soil science block of EGU programmes and SSS3 Soils as Records in Time and Space in particular have risen considerably within the last years. In previous years, SSS3 included 3 sessions (2015), 6 sessions (2016), 8 sessions (2017), and 2 sessions (2018). However, 12 sessions has been announced for the 2019 meeting. Below you will find a list of announced SSS3 sessions, all of which are relevant to our commission research interests:

SSS3 – Soils as Records in Time and Space

- SSS3.1 Soils and dust: Quantity, timing and effects of aeolian contributions to soils
  Convener: Tobias Sprafke | co-conveners: Eric McDonald, Daniela Sauer.

- SSS3.2 Soils and their processes in changing tropical and subtropical landscapes

- SSS3.3 Linking biogeochemical cycles and long-term soil changes
  Convener: Joscha Becker | co-conveners: Harold Hughes, Kyle Mason-Jones.

- SSS3.4 Recent advances in Paleoenvironmental reconstruction based on Paleosols
  Convener: Maria Bronnikova | co-conveners: Daniela Sauer, Tobias Sprafke.

- SSS3.5/GM6.9 Pedological and geomorphological legacies of past land use (co-organized)

- SSS3.6 Effects of urbanization on soils in different environments and circumstances
International Workshop on Archaeological Soil Micromorphology, Nancy (France), 11-12 April 2019

Dear colleagues,

We are happy to invite you to the next annual working session on Archaeological Soil Micromorphology that will be held at Nancy, in Lorraine (France), the 11 and 12 April 2019. This workshop will follow the aim of previous ones, as the last one in Bruxelles: an informal meeting, where participants are invited to bring their thin sections and where microscopy time and exchange of ideas and experiences prevail. Posters to present your thematic and problematic are welcome. The workshop will be organized at the Faculty of Sciences

Abstract deadline is 10 January 2019, 13:00 CET. For submissions, please enter:
("Campus Aiguillette") of the University of Lorraine, by Anne Gebhardt and Anne Poszwa (Laboratoire Interdisciplinaire des Environnements Continentaux). It will take place in practical class rooms, kindly made available at those dates by the Department of Geosciences, which proposes several types of microscopes for around 20-25 workers. As the workshop is free of charge and not sponsored, lunch on your own cost will be propose at the university cafeteria and we invite you to organize yourself for accommodation. Nancy has a big choice of hotels, small cafés and restaurants for evening meals and drinks...

Registration and expression of interest: If you wish to attend the workshop, we ask you to send an expression of interest by email to anne.gebhardt-even@inrap.fr
Please see: https://iuss.boku.ac.at/files/wasm_nancy_2019_form.pdf

Looking forward to see you next spring!

Anne Gebhardt & Anne Poszwa
Organizing Committee

INQUA 2019 Dublin, Ireland, 25-31 July 2019

Deadline of abstract submissions: 9 January 2019

We would like to draw your attention to the sessions of the Paleoclimate (PALCOM) Commission and the Terrestrial Processes, Deposits & History (TERPRO) Commission:

- Upscaling Paleoecological, archaeological and historical records of land-use and land-cover change.
- Understanding Quaternary proxy records of teleconnections between mid-latitudes, polar and tropical regions
- Aeolian mineral dust and climate: Interactions, simulations and climate archives.
- The future of Quaternary geochronology.
Tropical and subtropical rivers and human activities: Multi-proxy approach of the fluvial records from the Late Glacial to the Anthropocene (Poster only).

We would also like to highlight the following Poster Only session:

Soil formation: its rates and its use for reconstructing Quaternary landscape evolution
Daniela Sauer (Convenor) Sergey Sedov (Co-Convenor) Maria Bronnikova (Co-Convenor)

Successions of Quaternary sediments often contain intercalated fossil soils. Such Paleosols may record phases of relative geomorphic stability (in successions of slope deposits), of low lake/sea levels (in successions of predominantly aquatic sediments), or of decreased aeolian dynamics (in successions of aeolian sediments).

Climatic changes, geological and tectonic processes, as well as human impact, may control the alternation of sedimentation and pedogenesis. For example, a slope sediment burying a paleosol may reflect climatic deterioration, seismicity or anthropogenic activities such as deforestation, agriculture and overgrazing - all provoking slope instability.

Pedogenetic properties of Paleosols provide further information on the time of geomorphic stability, as well as the climatic conditions and the vegetation during that period. However, profound knowledge on soil forming processes in different climates and under different vegetation covers, is necessary for interpreting a Paleosol with respect to the duration and environmental conditions of its formation time. Therefore, in this session we especially welcome contributions on:

a) Studies of soil formation as influenced by time, climate, vegetation, parent material and relief, trying to answer questions such as: How much time is needed for a certain soil to form? Which environmental conditions are required for a certain soil to develop?

b) Research, in which the analysis and interpretation of Paleosols has been successfully used to reconstruct the duration and environmental conditions of certain periods.

c) Novel methodological approaches and new proxies that have the potential to improve Quaternary Paleoenvironmental reconstructions based on Paleosols.

Go here to submit your abstract: https://app.oxfordabstracts.com/login?redirect=/stages/646/submission

Any questions relating to abstract submissions should be sent to abstracts@inqua2019.org
To support the attendance of Early Career Researchers and Developing Country Researchers at the 20th INQUA Congress in Dublin, INQUA will be providing a limited number of attendance support awards.

The full list of sessions per INQUA commission is available at:

Please visit the INQUA 2019 website for the most up-to-date information:
http://www.inqua2019.org/

X INTERNATIONAL SCHOOL ON PALEOPEDOLOGY FOR YOUNG SCHOLARS IN SIBERIA, “PALEOSOLS AS A SOURCE OF INFORMATION ABOUT PAST ENVIRONMENTS”, 1-6 August, 2019

FIRST CIRCULAR

The organizing committee of the International School on Paleopedology for Young Scholars in Siberia; “Paleosols as a Source of Information about Past Environments”, announce the X School that will be traditionally held at the Institute of Soil Science and Agrochemistry SB RAS (Novosibirsk-Altai region) during 1-6 August, 2019, in several sites in Topchikhinsky District of the Altai region (300 km away from Novosibirsk). This area has a series of paleosols of different ages (up to 1 million years) which are exposed across the Ob River.

Specialists on paleopedology and Quaternary deposits will lecture on actual problems of paleopedology and inextricably related issues of soil evolution and present new approaches and methods for studying these soils. Master-classes will include both field and analytical approaches.

Specific lectures will be delivered by leading international scientists and include a wide range of topics:

‣ Paleopedology and paleoecology: basic concepts and methods.

‣ Paleosols, the environment and man in the Holocene and Pleistocene.

‣ Specificity of paleosols of archaeological objects.
• Soils and paleosols as a memory of biosphere-geosphere-anthroposphere interactions.
• Buried soils of urbolandscapes and methodological features of their study.
• The problem of classification of soils and paleosols.
• Humic substances and paleoenvironment reconstructions.
• Micromorphological analysis in paleopedology.
• Palynology and ancient soils.
• Phytoliths and their use in the study of ancient environments.
• Biomarkers and stable isotopes in paleopedology.
• Trace elements and their role in the evaluation of paleosol geochemical status.
• The problem of using algae in paleopedological research.
• The problem of absolute dating of Quaternary formations.

…and more!

The scientific session of young scientists will be dedicated to different aspects of "retrospective and predictable evolution of soils and environment".

The working languages are Russian and English.

The texts of custom-made lectures and reports of young scientists participating in the School will be published before School begins. Custom-made lectures will be published in separate brochures in Russian and English (submissions may also be in Russian and English). Participants will be provided with published materials and brochures that include some of the School’s lectures and special literature.

The registration fee is 110 Euro, the Russian participants are partly supported by the sponsors and their fee is equal to 1500 rubles. The Organizing Committee has the opportunity to provide some sponsorship to young participants.
An excursion to the Altai Mountains will take place after School ends, from 6 to 8 August. The terms of which will be announced in the second circular. Implementation of the excursion will depend on the number of people willing to participate. The number of young participants is limited by 35-40 people.

REQUIREMENTS FOR PUBLICATION

- Format: Word in A4 format;
- Font: Times New Roman, basic size 14, line single spacing 1.2 points.
- Indentation 1.25 cm, all fields to 2 cm.
- Text length: up to 4 pages (including figures, tables and summary).
- Title is typed as all capitals (one size) and bold.
- In one line; indicate the initials and surname(s) of author(s).
- Next line; indicate the affiliation, email address (center alignment).
- Main text should be justified and start after one line space (under the affiliation line).
- Title of the article, name(s) of the author(s) and their affiliation, as well as the Summary (4-5 sentences, 12 pt) are attached in English at the end of the article; The Russian text of the summary should be also attached for possible editing of the English text. It is not included in the total volume of full pages.
- References should be indicated in square brackets according to the serial number of each source, e.g. [1, 3–6] and placed in the bibliographical list.
- Illustrations (jpg or tif) should be submitted at a minimum resolution of 300 dpi.
- Materials should be sent by email in RTF (.rtf) (see email below).

CHECK IN: In order to participate in the School participants must submit a registration form until March 01, 2019 by e-mail addressed to the executive secretary of the conference (see email below).
The texts of the materials and registration fee (110 Euro) should be sent until June 5, 2019, after the admission's approval of participating. The payment includes food, accommodation and special literature.

Details regarding the post-School tour will be announced in the second circular. Registration fee must be sent after receiving the second circular, until June 5, 2019 by postal order to the address: 630090, Novosibirsk, Zakharova Elena Gennadievna, on demand (marked “Fee participation in the International Scientific School”). If no accounting documents are needed, payment can be made upon arrival. The number of participants is limited to 35-40 people.

The Organizing Committee is ready to provide limited number of travel grants. Grant applications should be sent until June 5, 2019.

Organizing Committee: Phone: +7-913-895-59-05; +7-913-472-77-05
e-mail: paleosol@yandex.ru

Natalia Bazhina

QUASAP Pedogenesis Workshop: Field and indoor workshops in Ghent, Belgium, 1-7 August, 2019

In the series of QUASAP workshops, there will be a new edition organized by Peter Finke, Ghent University, in Belgium. All interested colleagues are welcome to this workshop that will take place directly after the INQUA Congress in Dublin. It will start in the evening of Thursday 1 August 2019. The focus of the workshop will be on three activities:

1. Interaction between participants in the form of workshop presentations on soils and paleosols.

2. Several excursion days, with a focus on the relations between the soil forming factors and the field soil, by looking at soils developed in various parent materials, in different topographic positions and also some paleosols. Most of the soils are well-documented (physical and chemical analyses, mineralogy, and in some cases also micromorphology).

3. Some of the soils that will be observed will also be modelled. We will do this in a PC-workshop format, building the required model inputs (parent material, climate, vegetation,
topography) and evaluating results of model runs. Discussion would focus on additional
value of modelling relative to field observations, missing model functionality and
possibilities, etc.

Preliminary workshop program:

› Thursday, 1 August 06 pm - 09 pm: reception and appetizers.

› Friday, 2 August 09 am - 12 pm: Indoor workshop with presentations of participants and
discussion 01 pm - 05 pm: Field workshop, soils developed in variable parent materials
(periglacial relics).

› Saturday, 3 August 08 am - 12 pm: Field workshop, Holocene soils in variable parent
materials (Figure 1) 01 pm - 06 pm: Indoor modelling workshop, modelling soil genesis as
a function of parent material, discussions.

› Sunday, 4 August Free day for individual visits of Ghent, Bruges, Antwerp, etc.

› Monday, 5 August 09 am - 11 am: Indoor workshop with presentations of participants and
discussion 11 am - 05 pm: Field workshop, man-influenced soils and paleosols in cover
sands (Campina, incl. Allerød soils; Figure 2).

› Tuesday, 6 August 08 am - 12 pm: Field workshop, paleosols in loess (Rocourt
pedocomplex, MIS5) 12 pm - 06 pm: Field workshop, loess soils and topography.

› Wednesday, 7 August 09 am - 14 pm: Indoor modelling workshop, modelling loess soils
and paleosols, discussions 14 pm - 18 pm: Continued interaction, departure.

› The workshop fee will cover 6 overnight stays in a basic hotel, dinner, refreshments and
sandwich lunches on the four workshop days, and rental of transport buses. The fee will
be € 825 per person. The minimum number of participants is 8, the maximum is 17 (due
to field site size and capacity of PC-rooms).

Timeline:

› February 1, 2019: Pre-registration and abstract submission opens.

› March 27, 2019: Deadline for pre-registration (corresponds to deadline of INQUA early bird
registration).
• April 1, 2019: Decision about Go/NoGo based on number of pre-registrations (min. 8 pre-registrations needed).

• June 1, 2019: Deadline for final registration, payment and abstract submission.

• July 18, 2019: Distribution of the final workshop program.

• August 1, 2019: Start of the workshop.

https://www.uni-goettingen.de/de/pedogenesis+workshop+2019+in+belgium/578659.html

XIV International symposium and field workshop on paleopedology (ISFWP-XIV)
15-23 August, 2020

Paleosols, pedosediments and landscape morphology as archives of environmental changes, will be held in Russia, Altai region, in the second half of August (probably 15-23), 2020. Final dates will depend on dates of adjacent events: particularly meeting of the IUSS Commission 1.1. where a section on paleosols will take place.
Organizers: IUSS commission 1.6, Institute of Geography, Russian Academy of Sciences, Institute of geology and mineralogy SB RAS, Novosibirsk, Russia Institute of Water Problems, SB RAS, Barnaul, Russia Institute of Soil Science SB RAS, Novosibirsk, Russia.

We plan for two or three days of academic sessions in Barnaul, at the Institute of Water Problems, Russian Academy of Sciences, Siberian Branch. The academic part will be followed by field workshop (four field working days and two travelling days), which will cross Russian Altai from north to the very south, up to the Mongolian border.

Investigation of exciting Pleistocene and Holocene soil-sedimentary sequences and specific elements of landscape morphology will be accompanied by scenic views of Siberian Chemozemic steppes, mountains with high snowy peaks and variable landscapes; from mountain tundra and larch taiga up to cold steppes and desert steppes. The following sites will be demonstrated: Middle-Late Pleistocene Loess-paleosol sequence of Krasnogorske in the northeastern low mountain part of Russian Altai; three Holocene pedosedimentary sequences in different parts of southeastern Altai; Two surface polygenetic profiles recoding Holocene environmental history: Skeletic Kastanozem Cambic, and Skeletic Cambic Calcisol Yermic, southeastern Altai; Geoforms and sediments related to different events of regional Pleistocene and Holocene environmental history: glacial geoforms, dammed lake geoforms and deposits, seismic landslides and more.

Preliminary calculated fee for participation in ISWP-XIV will be 800 €.
Soil Science and Archaeology: Complementary Fields in Studying the Past

Eric C. Brevik

Departments of Natural Sciences and Agriculture and Technical Studies, Dickinson State University, Dickinson, ND, USA; Eric.Brevik@dickinsonstate.edu

Human use and treatment of soils have been an important factor in the rise and fall of past civilizations. Furthermore, we build our civilizations and conduct our daily activities on soils, and many of our lost and discarded items end up in the soil. Anthropogenic activities impact soils in ways that can alter the properties of those soils, leaving an imprint on them, and in some cases can “reset” the clock on soil formation, providing opportunities to study pedogenesis. Paleopedology is able to provide information about past climates, and climate change has contributed to the advance and decline of civilizations over time. For reasons such as these, soil science and archaeology are complementary fields that are able to provide a good deal of information to each other. This brief article will highlight a few examples of this cooperation.

Archaeologists seek to understand past civilizations, and some archaeologists have made extensive use of soil science knowledge and principles in this quest. Studying soil properties at an archaeological site can provide insight into the environmental setting at the time of human occupation and the types of resources that may have been available for human use. Artifacts found in the soils at archaeological sites provide insight into past diets, land use, and activity patterns at the site. Buried soils can serve as markers indicating where artifacts are likely to be found, and the location of artifacts within a soil can sometimes be used to assign approximate dates to the artifacts. Soils can be used as part of paleoenvironmental reconstructions, which can direct archaeologists to locations that were most likely to host past human settlements, and such reconstructions are also an important part of understanding past climates, climates that would have influenced past civilizations. And understanding pedogenic processes is important to understand how artifacts may be altered over time in the soil environment, including what types of materials are likely to be preserved versus not preserved.
Archaeology can, in turn, provide insights to soil scientists. A sequence of archaeological artifacts buried within the soils of a site can provide dating controls that allow investigation of rates of pedogenesis or the accumulation of parent materials. Archaeological sites allow soil scientists to investigate the types of soil changes that accompany particular types of human management, and with some types of activities, such as building earthen structures or quarrying, past humans have created an opportunity to study pedogenesis by creating a known beginning date for soil formation. Providing the date at which pedogenesis began in these situations is the realm of archaeology.

It is certainly not possible to provide a complete listing of the ways that soil science and archaeology interact in this short article, but if this is a new idea to the reader it has hopefully served to stimulate enthusiasm to learn more. There are many journal articles and books available on this topic and a number of geoarchaeologists and archaeologically-inclined soil and geoscientists actively working in this area. Collaborations between soil scientists and archaeologists should continue to yield important and fascinating information in the future.

This article is based on information from Brevik et al. (2018). The reader is referred to this chapter and the references within it for additional information.


Soil evolution and origin of landscape in a late Quaternary tectonically mobile setting: the Po Plain-Northern Apennines border in Lombardy (Italy)

Chiara Zuffetti

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The paper presents the interaction between soil-forming, erosion, re-deposition and geomorphic processes which contributed to shape the present-day landscape at the border between the Late Pleistocene Po alluvial basin and the Apennine orogen, Northern Italy. Geopedological field observations and micromorphology played a major role in decoding the
concurrent pedogenetic, faulting and climatic history recorded by superposed loess-paleosol sequences on top of up-thrustsed alluvial units. MIS5- and MIS3-related paleosols are preserved on relics of stable surfaces, while they are reworked as colluvial wedges in the hangingwalls of active faults. MIS2 loess covered these different settings before being lately displaced. The paper suggests important hints on the relation between (paleo-) soils and the nature of the geological surfaces, that may have general applicability to the study of comparable continental tectonically active settings.

Figure 3 of the paper. A) Logs of the pedostratigraphic profiles described in this work. Note the different, superposed phases of clay illuviation along each profile and the stratigraphic position of redeposited soils (dark grey areas). The pedostratigraphic correlation scheme across the San Colombano relief (Northern Italy) is proposed. B) Section view of the vertical and horizontal variability of soil colours, pH and Iron content of the soil profiles of panel A. RI=Redness Index of the soil horizons (sensu Buntley and Westin, 1965; Cordova, 2000); note the different RI of superposed B horizons belonging to the same profiles. AIR=active iron ratio. Sample location: see Table 2 of the paper.

This article is based on information from Zuffetti et al. (2018). The reader is referred to this paper and the references within it for additional information.

Special Issue of Geosciences: “The Imprint of Paleoenvironments on Soils and Paleosols”

Still open for submissions until December 31, 2018

This Special Issue aims at gathering studies in which soils and Paleosols are used as records of former environments that influenced human societies and, vice versa, as records of the influence of these societies on their environment. We welcome contributions on the influence of environmental factors on pedogenesis, on the use of soils and Paleosols as records of present and former environments, on advances in geochemical, (sub-)microscopic and other techniques in (Paleo-)pedology, and on evaluating the archaeological relevance and heritage value as well as developing conservation strategies for Paleosols representing valuable Paleoenvironmental archives.

The Special Issue includes selected papers presented in the EGU2018 session on “Past environmental conditions and human activities as recorded in soils, Paleosols, landforms and vegetation”, but was and is also open for other submissions.

The first papers of the Special Issue have already been published in Geosciences by now, and several others are currently in the review process.

More information on the Issue and the published papers (open access) can be found here:

https://www.mdpi.com/journal/geosciences/special_issues/imprint_palaeoenvironments_soils_palaeosols

Anna Schneider
Epilogue of a PhD Thesis

Early Eocene paleosols on King George Island, Maritime Antarctica, as a paleoenvironmental proxy: An epilogue of my PhD research

Identifying and interpreting paleosols is often dependent on the researcher’s ability to distinguish them from recent soils and environments. Such is the case in Maritime Antarctica (King George Island) - the study area of my PhD research, where the field morphology of paleosols is highly similar to local rock deposits (e.g., mudstone and pyroclastic rocks). Hence, one of the main goals of my PhD study was to provide a framework for better distinguishing paleosols from other geological materials. This was done by applying straightforward parameters of field morphology and micromorphological analysis (Spinola et al., 2017a).

I argued that a detailed morphological description of paleosol profiles is a strong and efficient method for differentiating paleosol horizons from rock layers, and (paleo)peds from geological features (Figure 1). Complementing the field description, I made thin section descriptions of clearly pedogenic features such as microstructures, patterns of in-situ weathering, bioturbation, and redoximorphic features (Figure 2). The combination of micromorphology and field observations was essential for identifying paleosol profiles. After overcoming this first challenge, the key aim of my thesis was to use these paleosols as a proxy for providing a better understanding of the Early Eocene paleoenvironment. The earth was much warmer during Early Eocene and above freezing temperatures were predominant in Antarctica. However, no paleopedological investigations had yet been made in King George Island despite the abundant studies on other paleoenvironmental archives (especially plant fossils).

A highlight of this research was the identification of the origin of clays (smectite group) by using micromorphology (Spinola et al., 2017b). As a preliminary observation, the clay features could have been classified as coatings and/or infillings. However, the typical orientation or enrichment of illuviated clay was not detected. This was somewhat puzzling, as smectites are related to soils under marked dry-wet climates. Moreover, the paleosols were mostly red; the typical color of soil in a dry-wet climate (Spinola et al., 2018). However, other observed paleosol features and proxies (e.g., plant fossils) indicated a wet and cool climate in the study area during Early Eocene. To overcome these enigmas (of clay origin...
and red color), I conducted a comparative fabric analysis of soil and rock fragments, and mineralogical analyses of iron oxides.

Figure 1. Field morphology. a) red paleosol profile covered by a basalt flow. The ruler marks 62 cm depth but we were unable to dig up to the R horizon due to the material hardness; b) horizonwise disposition of different peds shape and colors. Note the strong red color and the predominant angular blocky structure becoming more subangular upwards.

Figure 2. Bioturbation and redoximorphic features on thin sections. a) a smooth channel (black arrow) cutting a massive groundmass; b) a smooth channel void (white arrow) filled with clay at the tip (green arrow) and iron oxides (red arrow). Note the moderately impregnated groundmass by iron oxide.
I reached two major conclusions: 1) Clays were mostly originated by hydrothermal activity during the parent material deposition and later reworked by pedogenesis, and 2) Red color mostly resulted from burial diagenetic transformation of ferrihydrite to hematite. Thus, indicating an interesting and complex combination of depositional-pedogenic-diagenetic processes.

Morphological analysis as a tool for paleosol analysis has its advantages and limitations. In my view, the positive aspects are having a chance of comparing features with modern analogs and be able to detect polygenesis. The main limitation, and perhaps the most obvious, is that morphological analysis is experience-based and subjective. Therefore, it is not always easy to reach an agreement. I, therefore, bear in mind the personal advice which I received a few years ago from Georges Stoops: “a good description never changes, only the interpretations”.


The 3th of December, 2018, Ryszard Mazurek PhD left suddenly to eternity, our late lamented friend, an educator, an unusually cheerful and modest man. We accepted this message with deep sadness.

Ryszard was born in August 31, 1970 in Kosice (Poland). In 1989 he began studies at the Faculty of Agriculture of the Agricultural University in Krakow. In 1994, he obtained a degree of Master of Science in Agriculture. In 2001, he received his degree of Doctor of Philosophy (PhD) in Agricultural Sciences and in 2015 he gained his habilitation degree in Agricultural Sciences. Colleague Ryszard Mazurek realized an entire career in the Department of Soil Science and Soil Protection of the Agricultural University in Krakow. He was an active member of the Polish Society of Soil Science (PTG) and the International Union of Soil Sciences (IUSS).
The scientific interests of Ryszard included many areas, but above all, soil micromorphology, the origin and classification of soils and geostatistics. Following his predecessors, Ryszard was the main initiator and organizer of modernizing the soil micromorphology laboratory of the Department of Soil Science and Soil Protection at the University of Agriculture in Krakow. Privately, he was a practicing farmer, therefore his research interests had a large application aspect. Colleague Ryszard Mazurek had a great ability to win over peoples, which is why he cooperated with many researchers from Poland and abroad. In his prematurely interrupted career he took part in many researches projects, both national and international, performing the function of head or a researcher. The results of his researches were published in leading scientific journals. Recently, he undertook the co-organization of the 16th International Conference on Soil Micromorphology in Krakow (2020).

His example has helped many young people find passion and talent in their research. Despite his young age, Ryszard was a true master, while remaining a friend. Many young scientists have benefited from his knowledge and skills. He took care of students and young scientist from Poland, Spain, Turkey and Ukraine. This attitude has been appreciated by students. Ryszard received the "Top Doctor" student award, and in 2010 he received the award in the plebiscite of students of the University of Agriculture in Krakow.

For his scientific, didactic and educational achievements, Ryszard was awarded by the President of the Republic of Poland with the Bronze Medal for long-standing service, and the Silver and Gold Badge of the Polish Society of Soil Science and also awarded by the Minister of Science and Higher Education of Poland Award for team didactic achievement. Five times he won the Award of the Rector of the University of Agriculture in Krakow.

Ryszard was a great friend, a good and noble man. He brought joy and heart to the team.

His smile will always remain in our memory.

Dear friend, rest in peace!

Friends
Editorial Epilogue

Science is very much dependent on communication among people. Exchange of ideas, assisting and being assisted, inspiring and gaining inspiration from others, are all about communication. This is why I see international newsletters, and specifically this newsletter, as a promising means of connecting people.

It was shortly before this issue was about to be concluded when I learned that our dear colleague, Ryszard Mazurek, has unexpectedly passed away. From the first moment, it was clear that we cannot publish the December Issue without acknowledging Ryszard. Thanks to the contribution of Tomasz Zaleski and other of Ryszard’s friends we were able to include the above éloge.

The next issue of Paleopedology Newsletter is expected in June 2019.

Best wishes,

Danny Itkin
Editor
Paleopedology Newsletter

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The Last Page

Artwork by Elad Oran

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