

PALEOPEDOLOGY NEWSLETTER No. 24, 2013

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3 June 2013

Dear paleopedologists,

with this Newsletter we would like to give you an overview about international paleopedological events that took place in 2012, and to inform you about activities planned for 2013. You will realize that paleopedologists were involved in a considerable number of events in 2012. We had not planned a separate Paleopedology Meeting for 2012, because we felt that the many events might even become competitive.

A major highlight in 2013 will be the XIIth International Symposium and Field Workshop on Paleopedology (ISFWP): "Paleosols, pedosediments and landscape morphology as archives of environmental evolution" in Kursk/Russia, 10-15 August 2013 (p. 14 of this Newsletter). Another great event will be the first Divisional Meeting of IUSS Division 1 in Ulm/Germany, 30 Sep - 5 Oct 2013 (p. 18). IUSS Division 1 is the Division that includes the Commissions 1-1 Soil Morphology and Micromorphology, 1-2 Soil Geography, 1-3 Soil Genesis, 1-4 Soil Classification, 1-5 Pedometrics and 1-6 Paleopedology; all these commissions will organize their own symposia at the conference.

In addition to these various activities, the most important recent development is that paleopedology got back in INQUA in 2012. You will read about the new INQUA Focus Group "PASTSOILS" on p. 2 of this Newsletter. Under the umbrella of "PASTSOILS" two initiatives have developed that are supported as INQUA Projects: AEMED "Loess and aeolian additions to current surface soils and paleosols in Mediterranean climate" and RAISIN "Rates of soil forming processes obtained from soils and paleosols in well-defined settings" (p. 3). Both projects will organize specific workshops and field trips in the second half of 2013 (p. 13, 16, 17).

We hope to see many of you again at the forthcoming events.

Best regards,

Yours Paleopedology Commission officers

Daniela Sauer (Chair), Sergey Sedov (Co-Chair), Alexander Makeev (Secretary)

A. Paleopedological activities within INQUA

A1. New Focus Group **PASTSOILS**: „Paleosol and soil analysis for assessing climate, time and duration of land surface stability of Quaternary terrestrial systems”



International Focus Group within the INQUA Commission on Terrestrial Processes, Deposits and History (TERPRO) <https://ppsg2011.uni-hohenheim.de>

Focus Group Leaders: Daniela Sauer (Germany), Rivka Amit (Israel), Sergey Sedov (Mexico)

Paleopedologists used to be organized in INQUA as a TERPRO subcommission. However, since 2007 INQUA has a new structure that does not foresee the existence of subcommissions. Hence, paleopedology was not represented in INQUA from 2007 until 2011.

According to the new structure of INQUA, groups can apply for establishing an International Focus Group or Project:

„INQUA funding for International Focus Groups (IFGs) and projects is designed to kick-start initiatives and international collaborations. Funding is awarded for one or more years during an inter-congress period (projects) or up to two inter-congress periods (IFGs), provided there is sufficient justification of the continued need for financial support“ (cited from <http://www.inqua.org/forms.html>).

In 2012, we successfully applied for the International Focus Group „PASTSOILS“. The main overall objective of the PASTSOILS Focus Group is to establish a solid base for interpreting paleosols in terms of duration of soil development indicating tectonically and geomorphologically stable periods. Moreover, the importance and spatial pattern of dust production, deposition and incorporation into soils in the Mediterranean region will be evaluated. The present state of the art with respect to dating pedogenic features and new molecular and isotopic methods for palaeo-environmental reconstruction based on paleosols will be reviewed and evaluated. Combining knowledge about duration of pedogenesis derived from soil properties with absolute ages from dating pedogenic features will significantly increase the potential contribution of paleosol studies for developing chronologies of Quaternary continental sedimentary records.

The focus group will provide information to the international scientific community about:

- rates of soil forming processes in different climates
- field and laboratory methods that are useful for assessing the stage of soil development
- methods of dating various pedogenic objects
- soil stratigraphy and interpretation of soil dating
- biological proxies (micro fossils, molecular & isotopic methods for palaeo-environmental reconstruction)
- spatial pattern of dust deposition and incorporation into soils in the Mediterranean region

(cited from the PASTSOILS website at <https://ppsg2011.uni-hohenheim.de>)

Under the umbrella of the International Focus Group PASTSOILS two projects have been funded by INQUA since 2012. The two projects AEOMED and RAISIN will be introduced in A2. and A3.

A2. INQUA Project AEOMED: “Loess and aeolian additions to current surface soils and paleosols in Mediterranean climate“

<https://ppsg2011.uni-hohenheim.de/94176>

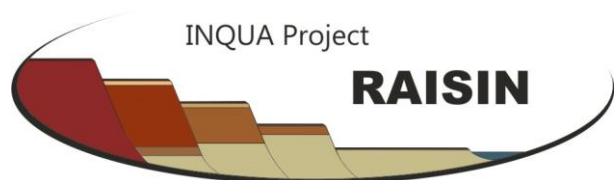
Project leaders: Rivka Amit (Israel), Stefano Carnicelli (Italy)

The objectives of AEOMED are:

- (i) to assess the spatial pattern of primary and secondary loess deposits across the Mediterranean;
- (ii) to analyze primary loess successions in similar geomorphic units of various Mediterranean environments, in order to evaluate the contribution of proximal and distal dust sources to the formation of Mediterranean soils;
- (iii) to estimate the potential of dust emission and deposition in the various Mediterranean regions, based on the understanding of the mechanisms of dust generation, transport and deposition;
- (iv) to evaluate the rates of loess/dust deposition in the context of palaeo-climate reconstructions;
- (v) to detect sources of recent and palaeo-dust/loess around the Mediterranean.

A3. INQUA Project RAISIN: “Rates of soil forming processes obtained from soils and paleosols in well-defined settings“

<https://ppsg2011.uni-hohenheim.de/83989>



The project RAISIN has four major objectives:

1. Reviewing and compiling existing studies

The first objective is to provide thoroughly reviewed and checked knowledge on directions and rates of soil forming processes in different climates. This knowledge can be used in future palaeo-environmental reconstructions to obtain the best possible information from paleopedological records in Quaternary sediment-soil successions. This first objective will be achieved through reviewing, discussing and combining the numerous existing data on soil development with time by a group of experts in this field collaborating in RAISIN. In the past decades significant progress has been achieved in evaluating the rates by which soil forming processes proceed, using mostly surface and buried soil chronosequences. These available datasets form the base to utilize paleosols as chronometers of the duration of periods of land surface stability.

2. Defining soil properties indicative of progressive soil development and standardized methods

The second objective is to define soil properties that are most closely linked to soil age and are recommended to be used for estimating time-spans of soil development. Standardized field and laboratory methods that are useful for assessing the stage of soil development will be recommended as well. A standard and minimum set of field and laboratory analyses to be performed on soil chronosequences and paleosols will be defined to ensure that new studies will be carried out in a way that permits for comparison of newly produced with existing data to achieve the best possible overall scientific progress.

3. Identifying knowledge gaps

The third objective is to identify gaps in our present knowledge. Based on the identified gaps, recommendations will be given in terms of special foci (by topic and region) suggested for future research.

4. Establishing a network and stimulating new research

The fourth objective is to bring experts with various background and experiences in studying soil development with time in different regions of the world together and to stimulate the development of future projects. Up to now, studies on soil formation rates and well-analyzed sediment-paleosol sequences in tropical climates are rare, particularly in developing countries. Involving colleagues from these countries will help to identify existing knowledge gaps and suitable objects for future research especially in these countries and will stimulate the development of future collaborative projects that could significantly improve the world-wide coverage of paleopedological knowledge.

B. Paleopedological activities at international conferences, symposia and workshops in 2012

B1. Session at EGU (European Geosciences Union) General Assembly Vienna/Austria, 22–27 April 2012 “Soils as record of the past” <http://meetings.copernicus.org/equ2012/>

Convener: C. Zaccone, *Co-Conveners:* J.M. van Mourik, C. Barbante, and S.J. Kluiving

The session comprised 15 posters and 5 oral presentations. The oral presentations included:

W. Shotyk: *Reconstructing the environmental impact of smelters using Pb isotope analyses of peat cores from bogs: Flin Flon, Manitoba and Harjavalta, Finland (solicited)*

G.T. Swindles, P.J. Morris, A.J. Baird, M. Blaauw, and G. Plunkett: *Are peatland water-table reconstructions reliable proxies of past climate?*

M. Lamentowicz, M. Galka, K. Tobolski, and A. Górska: *Land-use change, climate and conservation of peatlands: lessons from the high-resolution palaeoecology peat archives of the southern Baltic region*

C. Giguët-Covex, J. Poulénard, F. Arnaud, J-R. Disnar, P. Sabatier, B. Wilhelm, I. Jouffroy-Bapicot, P-J. Rey, F. David, and E. Malet: *Past soil erosion history recorded by lake sediments in mountain areas (north and south French Alps): complex interactions with climatic and human activities*

J. Wallinga, M. Schilder, J. van Mourik: *Sand and soil dynamics studied by quartz OSL dating*

B. Jansen, K. Kalbitz: *A new biomarker approach to reconstruct past vegetation patterns*

B2. Session at Goldschmidt Congress Montreal/Canada, 24-29 June 2012 “Records of climate change from terrestrial archives: paleosols and loess” www.goldschmidt2012.org

Conveners: Mohammed Rafi G. Sayyed, Martine Gerard

The session comprised a poster session and 11 oral presentations. The oral presentations included:

Steven Driese, Lee Nordt, Gary Stinchcomb, Kimberley Kuijper: *Construction of a Fully Searchable Soils Database Integrating Soil Characterization Data and Whole-Soil Geochemical Data (Keynote)*

Carolyn Olson: *Regional Erosion Surfaces and Climatic Readjustment, Midwest USA: Clues from late Pleistocene loess and paleosols (OIS 5e-2)*

Steve Dworkin, Lee Nordt, Stacy Atchley: *Using Bulk Paleosol Organic Matter to Reconstruct the Carbon Isotopic Composition of the Atmosphere*

Sirle Liivamagi, Kalle Kirsimäe, Peeter Somelar, Juho Kirs: *Precambrian palaeosol from Baltica - reconstructing the Neoproterozoic climate*

Helaine Markewich, Milan Pavich, Douglas Wysocki, Ronald Litwin: *Post OIS6 climate-change records in the Lower Mississippi Valley and mid-Atlantic Coastal Plain*

Michal Ben Israel, Yigal Erel, Yehouda Enzel, Rivka Amit: *Geochemical Proxies for Changes in Dust Sources in Negev Desert Loess*

Anchun Li, Jie Huang, Hengyi Jiang, Shiming Wan: *Sedimentary evolution in the northern South China Sea since Oligocene and its responses to tectonics*

Martine Gerard, Frederic Fluteau, Vincent Courtillot, Maud Moulin: *Intrabasaltic Regoliths in the Deccan (India) and Karoo traps (Lesotho): witnesses of volcanic quiescence and environmental links*

Mohammed Rafi Sayyed, Sajid Hundekari: *Geochemical investigations of the intrabasaltic palaeosols (bole beds) from Deccan Traps, India in deducing the palaeoclimatic conditions*

Andrew Madden, Andrew Swindle, Leland Bement, Brian Carter, Alexander Simms, Mourad Benamara: *Nanodiamonds and carbonaceous grains in Bull Creek Valley, Oklahoma*

Sajid Hundekari, Satish Sangode, Mohammed Rafi Sayyed: *A comparative mineral magnetic study of the intrabasaltic palaeosols and modern soils from the Deccan volcanic province, India*

B3. Session at Eurosoil Congress Bari/Italy, 2-6 July 2012 “Soils and sediments as natural archives”

Conveners: Daniela Sauer, Claudio Zaccone, Alexander O. Makeev, Sylvie Quideau

The session comprised 26 posters and 12 oral presentations. The oral presentations included:

P. Felix-Henningsen: *Ancient dunes and paleosols of the Sahel and Sahara in East Niger as archives of Pleistocene and Holocene climate changes*

F. Scarciglia: *Late Pleistocene-Holocene Tephra and volcanic soils in the Vesuvius foothill, southern Italy: Reconstruction of time spans of soil formation and climatic changes*

C. Kabala: *Polygenetic Podzols developed of slope cover-beds in the Sudetes Mountains (SW Poland)*

M. Gocke: *Identification and quantification of postsedimentary root-derived OM in loess-paleosol sequences using lipid molecular proxies*

M. Egli: *Soil weathering and accumulation rates of poorly crystalline phases derived from a 1Ma chronosequence*

C. Zaccone: *Do smouldering fires along peat columns affect paleoenvironmental reconstructions?*

A. Huguet: *Branched tetraether lipids in a French peatland: application to the reconstruction of past temperatures and pH*

B. Jansen: *New multi-proxy approach to reconstruct vegetation dynamics from terrestrial archives in the Ecuadorian Andes*

F. Quinto: *Potential of $^{236}\text{U}/^{238}\text{U}$ and $^{240}\text{Pu}/^{239}\text{Pu}$ isotopic ratios as chronological markers for peat bogs complementing the classical ^{210}Pb method*

D. Said-Pullicino: *Carbon distribution along the profile of a compost-amended anthropogenic soil: evidence from a chronosequence study*

S. Geoffroy: *Multi-scale approach of the structure evolution of constructed Technosols during early pedogenesis*

A. Makeev: *Zonal soil pattern in relation to glacial history of the Russian Plain*

B4. Session at International Micromorphology Meeting Lleida/Spain, 8-14 July 2012 “Micromorphology for paleopedology, sediments and loess-paleosol sequences”

www.lleida2012.udl.cat

Conveners: Héctor Morrás, Peter Kühn, Daniela Sauer, Sergey Sedov

The session comprised 8 posters and 10 oral presentations. The oral presentations included:

Roger Langohr, Vera Marcelino, Johan Yans, Laurent Bock, Patrick Engels: *Micromorphological characterization of clay migration features and their relation to soil structure in a 3 m deep plateau soil at Transinne, Belgian Ardennes*

Elvira Roquero, Pablo G. Silva, Cari Zazo, Jose L. Goy, Francisco Borja: *Micromorphological features of soils developed in fluvio-marine sediments during the Last Interglacial in the Gulf of Cadiz (Atlantic South Spain)*

Tobias Sprafke, Birgit Terhorst: *Micromorphological investigation of the polygenetic paleosol development in the classic loess outcrop of Paudorf (Lower Austria)*

Seema Singh, B. Parkash, A. K. Awasthi: *Micromorphology as a tool in evaluating basin depositional environment*

Ana M. Alonso-Zarza, J. Genise, A. Meléndez, M. Verde: *A comparison between calcretes and insect traces micromorphology. Examples from the Canary Islands*

Fabio Scarciglia, Veronica Zumpano, Roberto Sulpizio, Fabio Terribile: *Late Pleistocene-Holocene paleoclimatic changes in the Vesuvius volcano area, southern Italy: a micromorphological study of volcanic soils and primary tephra*

Héctor José María Morrás, Lucas M. Moretti: *Controversy on the origin of the ferrallitic pedological mantle in Misiones. Micromorphological evidences of autochthony*

Peter Kühn, Andrej Sinitisn, Sergey Lisistyn, Dana Pietsch, Sergey Sedov: *Micromorphogenesis of MIS2-3 paleosols in Kostienki 14 and Borshchevo 5*

Claudio Zucca, Stefano Andreucci, İhsan Akşit, Y.K. Koca, Sameh Shaddad, Salvatore Madrau, Vincenzo Pascucci, Franco Previtalli, Selim Kapur: *Genesis and palaeoenvironmental implications of upper Pleistocene palaeosols on the NW Sardinian coast*

Clara Martí, David Badia, Rosa M. Poch, M.Teresa Garcia: *Genesis and characterization of a recarbonated argic palaeosol in Monegros Desert (NE Spain)*

B5. 2nd Würzburger Loess Symposium: “Palaeolandscapes of Middle and Late Pleistocene” Würzburg/Germany, 15 September 2012

Organizer: Birgit Terhorst, University of Würzburg, Germany

The symposium comprised six oral presentations:

Sergey Sedov, Svetlana Sycheva: *Palaeopedology of the Late Pleistocene loess sequences of Eastern Europe: implications for the palaeoecology of mammoth fauna and first modern humans*

Frank Lehmkuhl, Holger Kels, Jens Protze: *Differentiation of loess sequences and their geomorphology in Central and Eastern Europe*

Slobodan Markovic: *Danube loess stratigraphy – towards European loess chronostratigraphic model*

Pierre Antoine: *The Middle to Upper Pleniglacial boundary: A main level-mark at ± 30 ka in European loess-palaeosol sequence from Northern France to Germany*

Birgit Terhorst, Tobias Sprafke, Simon Meyer-Heintze: *News from loess-palaeosol sequences in Lower Austria*

Marc Händel: *A site-formation model based on field observations for the main Gravettian horizon at Krems-Wachtberg in Eastern Austria*

B6. International Conference “Geomorphic processes and geoarcheology - From Landscape Archaeology to Archaeotourism”, Moscow-Smolensk, Russia, 20-24 August 2012 <http://geoarch2012.narod2.ru>

The conference, hosted by the Smolensk University of Humanities, was organized by Russian Association of Geomorphologists, initiated by the IAG Working Group on Geoarchaeology. Co-organizers were Moscow State University (History and Geography Faculties), State Historical Museum (Moscow), Russian Academy of Sciences – Institute of Geography and Institute of Ethnology and Anthropology (Moscow), State Hermitage Museum (Sankt-Petersburg). The conference was countenanced by INQUA, TERPRO Commission.

Among some 90 participants there were almost 40 people from overseas representing 13 countries: Poland, Germany, Italy, Iran, Kazakhstan, Turkey, Belgium, Byelorussia, Mexico, Netherlands, Ukraine, Vietnam.

The first two days consisted of four oral and poster sessions: “Human dimensions of Quaternary palaeoenvironments”, “Local palaeoenvironments at archaeological sites”, “Alluvial geoarchaeology, palaeohydrology and paleopedology”, and “Preservation of geoarchaeological monuments, geotourism and archaeotourism”.

More than half of all presentations were related to paleoecological and paleopedological aspects in archaeological context, about 20 presentations included data on soil morphology and micromorphology.

On the last two days fieldtrips were organized. A fieldtrip to the Gnezdovo archaeological site was devoted to complex geoarchaeological studies of the widely known settlement at the Early Medieval trade route "from Varyangians to the Greeks".

On the last day the larger group visited the Serteyka archaeological complex in the Western Dvina River basin with Neolithic sites, pileworks of the Bronze Age, Iron Age settlements. The smaller group visited the Talashkino historical and art preserve, a notable cultural center in 1890th-1910th.

The conference program, fieldtrip guides and the extended abstracts volume can be downloaded from the conference website at <http://geoarch2012.narod2.ru/>. Selected papers of the conference will be published in *Quaternary International*, Special Issue "Human dimensions of Quaternary palaeoenvironments", and in a Special Issue of *Geo-Archeologia*, the journal of the Italian Geoarchaeological Association.



Fieldtrip to the Gnezdovo archaeological site.



Fieldtrip to the Serteyka archaeological complex, group photo.

On behalf of the organizers:

Maria Bronnikova, *Institute of Geography, Russian Academy of Sciences*

Andrey Panin, *Moscow State University, Faculty of Geography; Russian Association of Geomorphologists (RuAG).*

B7. Paleopedological contributions at the International Conference “ED@80: Loess in China and Europe - A Tribute to Edward Derbyshire”, Novi Sad / Serbia, 27-30 September 2012

Organized by the INQUA Loess Focus Group

Local Organisational Board:

Neda Mimica-Dukić, Lazar Lazić, Slobodan B. Marković, Milivoj B. Gavrilov, Đorđije A. Vasiljević, Miroslav D. Vujičić, Tin Lukić, Biljana Basarin, Mladen Jovanović, Tanja Armenski, Nemanja Davidović, Tamara Jovanović, Nemanja Tomić, Ivana Hrnjak, Daniela Arsenović, Boris Paško, Miomir Korać, Nemanja Mrđić

A number of paleopedologists attended this conference, contributing particularly to the Session “**Reconstruction of loess environments**”:

Anna O. Sizikova, Valentina S. Zykina: *THE GRAIN-SIZE AND SAND QUARTZ GRAIN MORPHOSCOPY OF LATE PLEISTOCENE LOESS DEPOSITS, SOUTH OF WEST SIBERIA*

Kathryn E. Fitzsimmons, Ulrich Hambach, Frank Lehmkuhl, Toshiyuki Fujioka, Radu Iovita, Adrian Dobos, Daniel Veres, Slobodan B. Marković, Shannon McPherron: *LOESS ARCHIVES AND PLEISTOCENE ENVIRONMENTAL DYNAMICS IN THE LOWER DANUBE BASIN*

Tobias Sprafke, Birgit Terhorst, Christine Thiel: *PAUDORF LOCUS TYPICUS, LOWER AUSTRIA – A POLYGENETIC RECORD OF LANDSCAPE EVOLUTION DURING MIDDLE PLEISTOCENE AND OIS 5*

Sándor Gulyás, Pál Sümegi, Dávid Molnár, Bálint Csökmei, Gergő Persaits, Thomas Stevens, Ulrich Hambach, Slobodan Markovic: *THE FIRST HIGH-RESOLUTION MULTIPROXY PALEOENVIRONMENTAL RECORD OF THE PAST 800 KYS FROM SW HUNGARY: A COMPARISON WITH COEVAL LOESS/PALEOSOL ARCHIVES OF VOJVODINA*

David Gergely Pall, Julia Hupuczi, Sandor Gulyas, Zsolt Veres, Pal Sümegi: *MICROMORPHOLOGICAL INVESTIGATIONS ON TWO PALEOSOL HORIZONS OF THE LOESS/PALEOSOL SEQUENCE OF MADARAS*

Jef Vandenberghe and Slobodan Markovic: *THE SEDIMENTARY ENVIRONMENT AT THE PETROVARADIN SITE AT THE TIME OF FORTRESS CONSTRUCTION: A CONTRIBUTION FROM GRAIN-SIZE ANALYSIS*

Ken O’Hara-Dhand and I. J Smalley: *A CAREFULLY DESIGNED SET OF BROMHEAD GLACIAL GRINDING EXPERIMENTS TO STUDY THE GENERATION OF LOESS PARTICLES*

János Kovács, Gábor Újvári, György Varga & Franz Ottner: *PRE-QUATERNARY/QUATERNARY PEDOSTRATIGRAPHY OF CENTRAL EUROPE BASED ON GEOCHEMICAL, CLAY MINERALOGICAL PROXIES AND FOSSIL ASSEMBLAGES*

Sergey Sedov, Birgit Terhorst, Svetlana Sycheva: *PALEOSOLS OF LAST INTERGLACIAL IN THE LOESS SEQUENCES OF UPPER AUSTRIA AND CENTRAL RUSSIA: COMPARATIVE PEDOGENETIC ANALYSIS AND PALEOECOLOGICAL INFERENCES*

Zdzisław Jary: *ICE-WEDGE CASTS IN THE LATE PLEISTOCENE LOESS-SOIL SEQUENCES IN POLAND AND NW UKRAINE*

Igor Obreht, Bjoern Buggle, Slobodan B. Marković, Dimitri Vandenberghe, Norm Catto, Biljana Basarin, Djordjije A. Vasiljević, Dragan Popov, Milivoj Gavrilov, Tin Lukić: *GRAIN SIZE VARIATIONS RECORDED AT BELOTINAC LOESS SEQUENCE (THE SOUTHERN LIMIT OF THE EUROPEAN LOESS BELT: INITIAL RESULTS)*

Zorica Svirčev, Slobodan B. Marković, Thomas Stevens, Ian Smalley, Igor Obreht, Ulrich Hambach, Tamara Dulić, Tamara Pantelić: *IMPORTANCE OF BIOLOGICAL LOESS CRUSTS FOR LOESS FORMATION IN SEMI-ARID ENVIRONMENTS*

B8. First Workshop of AEOMED: “Mediterranean palaeosols: evidence of the continuous interplay between climatic and event driven pedogenesis, with a special focus on the role played by dust inputs” Florence, Italy: 10/2012

Organizers: *Stefano Carnicelli, Edoardo Costantini, Daniela Sauer, Rivka Amit*

The workshop included a two-day oral and poster symposium and one-day field trip demonstrating loess-influenced soils in central Tuscany guided by Edoardo Costantini and Simone Priori.

The following papers were presented:

Rivka Amit, Yehouda Enzel, Onn Crouvi, Amit Mushkin, Batbaatar Jigjidsuren, Alan Gillespie: *The role of active sand seas in forming warm-desert loess sequences and implications to the Chinese Loess Plateau*

Michal Ben Israel, Yigal Erel, Yehouda Enzel, Rivka Amit: *Geochemical proxies for changes in dust sources in Negev desert loess*

Stefano Carnicelli, Francesco Malucelli, Anna Andreetta, Rossano Ciampalini, Guia Cecchini: *Chronology and aggradation rates of Southern Po Plain loess*

Mauro Cremaschi, Andrea Zerboni, Helena Rodnight, Christoph Spötl: *Loess in Northern Italy: New insights on dating, soil forming processes, and archaeology*

Edoardo A.C. Costantini, Simone Priori: *Is the middle Holocene loess soil cover a witness of a climatic deterioration during the Bronze age setting?*

Maayan Harel, Rivka Amit, Yehouda Enzel, Naomi Porat: *Buried and relict sandy soils as samplers of Quaternary dust in the central Coastal Plain, Israel: initial results*

Ivano Rellini, Luca Trombino, Francesca Ferraris, Pietro Mario Rossi, Marco Firpo: *Loess distribution on the northern flank of Ligurian Alps (NW-Italy): topographic influences and palaeoenvironmental implications*

Daniela Sauer, Lisa Zwanzig, Achim Brauer, Riyad Al-Sharif, Helmut Brückner, Fabio Scarciglia, Karl Stahr: *Late Pleistocene paleosols and lake sediment records of S Italy*

Andrea Zerboni, Francesca Ferraro, Ludwig Zoeller, Mauro Cremaschi: *A loess/palaeosol sequence at the margin of the Sahara (Garyan, Libya) Evidence for the expansion of the Sahara during the upper Pleistocene glacial periods*

In the concluding session the participants agreed on the following issues to be considered in future AEOMED activity:

1. The chronology of loess deposition in the Mediterranean needs to be revised, and a higher resolution chronology has to be established. This will lead to a better understanding of major loess accumulation phases around Mediterranean and advance the understanding of the Quaternary climatic conditions.
2. The sources of loess and dust should be identified more precisely; this is necessary in order to model dust transport mechanisms.
3. An integral study of dust sources and dust influx to soils developed in similar geomorphic positions around Mediterranean will allow to reconstruct the conditions, either climatic or of other nature (geomorphologic, anthropic) which trigger aeolian erosion and loess deposition.
4. The studies presented in the workshop stressed the need to develop methodologies for dust analyses to be used by all researchers studying dust and loess in continental and marine sequences.
5. The issue of (current) dust generation, transport and deposition should be linked to the issue of palaeo-dust such as loess. It needs to be tested whether processes identified for dust are comparable to those involved in loess generation, transport and deposition. For this purpose common analytical procedures should be applied in order to enable comparison of data from different regions across the Mediterranean.
6. Developing methods for tracing loess source areas was considered one of the most critical issues in studying loess and dust. A general agreement has been reached that high-quality particle size

distribution (PSD) data is crucial in determining dust sources, in addition to geochemical proxies such as analysis of isotopes and major elements.

7. None of the methods available for grain size analysis is perfect and accurate; thus, the comparison between samples analyzed by different methods is almost impossible. We need to select one common method in order to be able to compare sample data across the Mediterranean. The practical possibility of a cross-calibration will be examined.
8. It has been agreed that knowledge on geochemical and mineralogical tracing will be circulated and exchanged in a more intense way, which will be one of the activities of AEOMED in the next future.
9. A relevant effort of the AEOMED project will be the compilation of all existing data on wind patterns across the Mediterranean during the different climatic phases of the Late Quaternary; this kind of data is indispensable to generate sound hypotheses about sources and transport trajectories, but it is widely scattered, and no review exists on the present state of the art.
10. In conclusion, the following actions have been finally agreed, to be accomplished by AEOMED as part of continuation of the project:
 - a) Compilation of known loess occurrences in the Mediterranean, including these loess occurrences in the “Loess map of Europe”, created and managed by Dagmar Haase (Germany);
 - b) Continued exchange of experience concerning analytical methods;
 - c) Compilation of late Quaternary wind pattern data.



Florence provided a perfect venue for the workshop (Fabio Scarciglia and Daniela Sauer).



Transportation of the group during the field trip.



Continued discussion in the field (Stefano Carnicelli and Annette Kadereit).

Photographs: Lisa Zwanzig

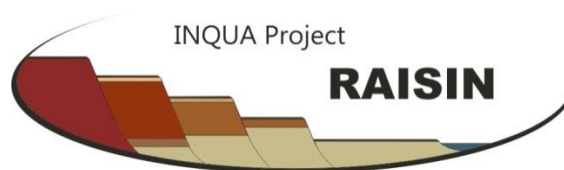


Simone Priori demonstrating polygenesis, including aeolian and colluvial processes, in a typical Terra rossa developed in a doline.

B9. First Workshop of RAISIN: “Rates of soil forming processes – achievements, challenges, research gaps –” Charlotte/North Carolina (USA), 5-6 November 2012

Workshop of INQUA project RAISIN:
“Rates of soil forming processes obtained from soils and paleosols in well-defined settings”,

Organizer: Daniela Sauer



The workshop included 11 oral presentations followed by extended discussions. Additional time blocks were used for discussing issues to be considered in future RAISIN activities, and defining soil parameters to be included in the RAISIN soil database. The following oral presentations were given:

Bruce Harrison: *Reflections on Chronosequences and Chronofunctions*

Elizabeth Solleiro Rebolledo, Sergey Sedov: *Rates of soil formation of Quaternary volcanic paleosols at different chronological scales*

S. Sánchez Pérez, E. Solleiro Rebolledo, E. McClung de Tapia, S. Sedov: *The Teotihuacan “black” paleosols: chronology of pedogenic processes and their relation to environmental changes*

Pauline Yawoa Da Costa: *The soil cover of West Africa: soil characteristics and pedogenesis*

J.P. Nguetnkam, F.Villieras, R. Kamga, G.E. Ekodeck, J.Yvon: *Mineralogy and geochemical behavior during weathering of greenstone belt under tropical dry conditions of the extreme north Cameroon (Central Africa)*

J. Harden, M. Reheis, M. Schulz, C. Lawrence: *Soil chronosequences in the Western US: emerging opportunities*

J.P. Nguetnkam, A.A. Ganwa: *Buried paleosols in Cameroon (Central Africa): examples from the Adamoua region and implications on landscape evolution*

P.N. Eze: *Application of geochemical climofunctions to palaeosols from West coast fossil park, South Africa*

D. Sauer, I. Schüllli-Maurer, R. Sperstad, R. Sørensen, K. Stahr: *Soil formation on land surfaces of known age in S Norway*

Eric McDonald: *Desert soils*

Peter Finke: *Modeling soil genesis at pedon and landscape scales: achievements and problems*

In the discussions the following issues were identified as particularly relevant for RAISIN work:

- soils in almost all parts of the world are influenced by dust input to varying extent; the effects of such dust additions (e. g. “rejuvenation” of soils) need to be considered;
- one of the major aims of the project is to compile data of soils that have developed for a known time-span under well-defined climatic conditions; this means however that also past climates under which these soils have developed need to be known;
- we usually study a limited number of surfaces of different age and assume that soil development between data points proceeds at the same rate, which is not necessarily the case since certain pedogenetic thresholds may exist between the data points, including extrinsic thresholds (e. g. changes in precipitation or dust influx) and intrinsic thresholds (e.g. a soil-forming process such as calcification or clay illuviation may change permeability of the soil thus creating perched water);
- landforms are continuously modified; e. g. terrace bodies are covered with colluvial material close to the next higher terrace and are progressively eroded close to the edge towards the next lower terrace;
- soil development on a land surface varies between north- and south-facing slope even if soils are of the same age;
- there is great variability of soils on landforms of same age; Bruce Harrison recommended use of non-destructive mapping tools to get an overview on variability before placing soil profiles;
- soils developed in volcanic material of different ages have a wide distribution over the world and contain easily weatherable minerals and are thus very useful for the RAISIN work;

- ferralitic and lateritic soils / soil sediments are widespread in West Africa also in areas that are in dry climates today; they are explained by a humid tropical paleoclimate that prevailed in all countries south of the Sahara from the Cretaceous period on;
- the Quaternary in West Africa is marked by alternation of moist and dry periods causing strong erosion, including incision down to the base of the weathering profiles; during the dry periods of the Quaternary, extensive dune systems (ergs) developed in the northern part of West Africa;
- the majority of the soils in West Africa developed on pre-weathered material on extremely old land surfaces that have been strongly influenced by geomorphic processes over time; establishment of soil chronosequences is extremely difficult if not impossible in this region; an appropriate way of handling the described kind of soil development within RAISIN needs to be found;
- many important questions related to critical zone processes and carbon cycling also require knowledge on the processes taking place in soils;
- soil organic carbon accumulates during early stages of soil development; in older soils it may be partly lost; however, it can be stabilized by clay or amorphous poorly crystalline iron oxides.

The next step of the RAISIN work will be to compile existing data on soil chronosequences and soils of known age developed in well-defined climates. Data will be compiled in the existing web-based Soil Carbon Database (<http://www.fluxdata.org/nscn>) after modifying it according to the needs of RAISIN. In this way the data will be made available for regional and global soil carbon budget estimates as well. Moreover, the Soil Carbon Database is already established and well-known in the soils community; hence dissemination of RAISIN data by entering them into the Soil Carbon Database will be more efficient than by creating a small new database.



Jennifer Harden (California, USA) relating soil age, position (mountain front - basin) and carbon storage.



Continued discussion during break, left to right: Bruce Harrison (New Mexico), Peter Eze (Nigeria), Peter Finke (Belgium), Eric McDonald (Nevada).



Jean Pierre Nguetkam (Cameroon), Marith Reheis (Colorado, USA), Pauline Yawoa Da Costa (Togo).

Photographs: Daniela Sauer



Field trip guided by Missy Eppes (North Carolina, USA): discussing soils and geomorphic processes in a small catchment.

B10. Session at EGU (European Geosciences Union) General Assembly Vienna/Austria, 7-12 April 2013 “Soil as a Record of the Past: Soil science in cultural and natural landscapes”
<http://www.egu2013.eu/>

Convener: Sjoerd Kluiving, Co-Conveners: Ian Simpson, Jan van Mourik, Claudio Zaccone

The session comprised 14 posters and 6 oral presentations. The oral presentations included:

Timothy Beach and Sheryl Luzzadder-Beach: *Soil and Human Interactions in Maya Wetlands (solicited)*

Rebecca Barclay, Ian Simpson, and Eileen Tisdall: *Formation and Cultural Use of Wetland Areas in Vatnsfjörður, Northwest Iceland*

Maria Dergacheva and Olga Nekrasova: *Lanthanides in humic acids of soils, paleosols and cultural horizons (Southern Urals, Russia)*

Arnald Puy: The construction of fertility in al-Andalus. Geoarchaeology in Ricote (Murcia, Spain, 8th century AD)

Karolina Leszczynska, Julie Boreham, and Steve Boreham: *Hidden Ice Worlds - Pleistocene glacigenic deposits in Essex, England. Application of the novel systematic approach to thin-section description*

Daniela Sauer, Lisa Zwanzig, Fabio Scarciglia, Annette Kadereit, Achim Brauer, Riyad Al-Sharif, and Helmut Brückner: *Steppe to forest steppe ecosystems during the last glacial period in S Italy - evidence from sediment-paleosol sequences, compared to lacustrine archives and marine data*

C. Summer schools in 2012

C1. 3rd Int. Summer school on Paleopedology Siberia, 1-5 August 2012

The Field Summer School on Paleopedology was held in Volodarka settlement, Altai Region. Maria Dergacheva and Alexander Makeev served as co-convenors. The honorary Chairman of the School was Academician Gleb Dobrovolski. 35 young scholars from various parts of Russia, Kazakhstan and Germany participated in the School. Working languages were Russian and English.

The School included field tours in the form of master-classes, presenting loess-paleosol sequences with detail record of lower, middle and upper Pleistocene history. A set of buried, surface and exhumed paleosols resulting from combination of tectonic activity and erosion cycles were observed in river Ob exposures up to 50 m high. Exhumed paleosols produce a mixture of recent and relic features in surface soils that were deduced in the field. Sampling techniques for different analyses were also discussed in the field.

The lectures covered the following topics:

- Palaeopedology in the system of environmental sciences;
- Morphology and micromorphology of paleosols;
- Environmental reconstructions based on microbiomorphs in paleosols;
- Classification of paleosols;
- Humic acids as a memory of paleoenvironments and isotopic composition of organic substances;
- Soil carbonates as a record of pedogenetic processes in paleosols;
- Microelements in paleosols as a source of information about paleoenvironments;
- Latest advances in paleomagnetic studies;

Invited speakers included Yuri Chendev, Maria Dergacheva, Zinaida Gnibidenko, Alexandra Golyeva, Olga Khokhlova, Alexander Makeev, Marina Lebedeva-Verba, Sergey Sedov, Michael Zech, Roland Zech, and Wolfgang Zech.

Young scholars presented their research at a special oral and poster sessions.

C2. 4th International Geochronology Summer School, September 2-7, 2012, Bergün, Switzerland: Dating anthropogenic and natural changes in a fragile alpine environment

This summer school was organized by the Swiss Federal Research Institute WSL (K.F. Kaiser (+), H. Gärtner, P. Cherubini), the University of Zürich (M. Egli, D. Brandová) and the Swiss Federal Institute of Technology ETH (S. Ivy).

The Bergün – Albula pass area (photo below) is rich in geomorphic features that provide a perfect insight into landscape evolution during the Pleistocene and Holocene. This area is also susceptible to natural hazards such as avalanches, rock fall, landslides and debris flows. All these aspects were topics during outdoor excursions. 22 participants from all over the world enjoyed an informative course within an intact nature. The program had multifaceted topics that were both presented in the lecture room and in the field.

The program included:

Dating techniques:

numerical methods (radiocarbon, exposure dating using cosmogenic nuclides, OSL, etc.); dendrochronology, ice-core chronologies; relative methods such as soil development, weathering rinds, Schmidt-hammer technique

Reconstruction of environmental parameters:

using dendroecology, stable isotopes, paleopedology, geoarchaeology etc.

Climate and landscape history:

combined use of various dating techniques and archaeology to analyse the structure of pre-historic settlements

Reconstructing geomorphic processes:

avalanches, mud flows, landslides, rock fall, forest fires, charcoal identification and dating

Several topics were covered by invited speakers from Italy (E. Costantini: Palaeopedology), Germany (E. Eckmeier: Geoarchaeology), United States (D. Dahms: Rocky Mountains) and Switzerland (S. Lowick: OSL; M. Hoelzle: Dating in glaciology, I. Hajdas: Radiocarbon dating, K. Hanselmann: Alpine ecology; etc.). In addition to the regular lectures, all participants presented their own research topics in special evening lectures. This practice led to very informative and fruitful discussions among the participants.



Participants of the Geochronology Summer School 2012.

D. Upcoming conferences

D2. IUSS Global Soil Carbon Conference in Madison/Wisconsin (USA), 3-6 June 2013

<http://iuss-c-conference.org/>

Organizing committee: Bill Bland (chair), Birl Lowery, Kevin McSweeney, Bob Murphy, Erika Marina-Spiotta, Leah Leighty, Alfred Hartemink

H. Curtis Monger (New Mexico, USA) will represent the Paleopedology Commission at this IUSS Conference with a talk on “Soils as generators and sinks of inorganic carbon in geologic time”.

D2. Second Int. Workshop of AEOMED: “Reconsidering Loess in northern Italy”, field workshop in the Po Plain, northern Italy, 1-3 July 2013

<https://ppsg2011.uni-hohenheim.de/84878>

Organizing committee: Rivka Amit (Geological Survey of Israel), Andrea Zerboni (Università degli Studi di Milano), Franz Livio (Università dell’Insubria – Como), Stefano Carnicelli (Università di Firenze), Alessandro M. Michetti (Università dell’Insubria – Como)

Sites of interest at the margins of the Po Plain:

- Monte Netto (Capriano del Colle, BS): Monte Netto is an isolated hill in the middle of the northern Po Plain, whose growing is due to the amplification of a buried thrust-related anticline since Middle Pleistocene. A thick stratigraphic sedimentary sequence is exposed in a quarry on the top of the hill. This sequence is consisting of fluvio-glacial sediments capped by a thick loess pack, intercalated with deeply rubified paleosols. The loess sequence is probably the thickest in northern Italy and corresponds at least to three events of aeolian sedimentation, two of which are dated, by OSL, to the Upper Pleistocene.
- Val Sorda (Incaffi, VR): The Val Sorda sequence is a very well preserved Upper Pleistocene stratigraphic section consisting of the succession of a till, capped with a rubified Eemian paleosol, which is overlain by a colluvial layer and by a thick loess unit, including three chernozem paleosols, formed during MIS 4 and 3; the sequence is capped and preserved by fluvio-glacial and glacial deposits (MIS 2).
- Ghiardo (Cavriago, RE): At Ghiardo site, at the margin of the Apennines, there is a complex loess sequence, deposited on Pleistocene alluvial terraces and representing a long term of aeolian sedimentary phases (dust accumulation). This sequence underwent weathering processes during the climate change phases of the mid-to-late Quaternary. Moreover, the surface buried by loess and its initial phase of deposition are contemporaneous with the dwelling of Mousterian hunters.
- Boschi di Carrega (Collecchio, PR): The high terrace of Boschi di Carrega bears a thick loess accumulation of Late Pleistocene age, belonging to the same loess sequence of the Ghiardo plateau. Due to long-term, stable use of land as hunting grounds and to institution of the area as a park, back into the 18th century, conservation of the loess cover is better than average along the northern Apennine piedmont.

Workshop program:

Monday, 1 July:

9.00/9.30: short opening ceremony and leaving from Como; 10.30: picking up people arriving in Milano (Central Station); 12.30: arriving at Incaffi, lunch at Incaffi; 14.00: Val Sorda site; 17.00: leaving from Incaffi to Capriano del Colle; in the evening outreach meeting with the community at the Municipality of Capriano del Colle; staying overnight in Capriano del Colle.

Tuesday, 2 July:

9.00: Monte Netto section (opening of a new trench); 13.00: Lunch in Capriano del Colle; 14.30: leaving from Capriano del Colle to Reggio Emilia/Parma; Ghiardo site (opening of a new trench), close to Reggio Emilia; staying overnight between Reggio Emilia and Parma.

Wednesday, 3 July:

9.00: Collecchio (Parma): visit the Boschi di Carrega site (opening of a new trench); 13.00: lunch in Collecchio; short discussion; 15.00: transfer to Parma (Central Station), Milano (Central Station) and Como (arrival in the evening).

D3. XIIth Int. Symposium and Field Workshop on Paleopedology (ISFWP): “Paleosols, pedosediments and landscape morphology as archives of environmental evolution”, Kursk/Russia, 10-15 August 2013
<http://agora.guru.ru/display.php?conf=paleopedology2013>

Chair of the organizing committee: O.N. Solomina (Institute of Geography, Moscow, Russia)

Co-Chair: S.A. Sycheva (Institute of Geography, Moscow, Russia)

Contact: Dr. Maria Bronnikova, secretary of the Organizing Committee

E-mail: paleopedology2013@gmail.com

Kursk is located in the central part of the Russian Plain, within the East European loess area, which is the most extensive in the World. A number of unique loess-paleosol sections have been described here. At the same time the area is also famous for fundamental Dokuchaev’ studies of Russian Chernozems. Alekhin Biosphere Reserve is the only place in Europe with never ploughed Chernozem under natural steppe vegetation.

ISFWP Program

August 10 - 11: Pre-conference tour

August 12 - 13: Scientific sessions, sightseeing in Kursk, gala dinner

August 14 - 15: Post-conference tour

August 15: Departure to Moscow by night train at 7-26 pm, arrival in Moscow at 9-05 am on August 16.

Highlights of the field trips

- Middle and Late Pleistocene loess-paleosol and pedo-sedimentary sequences;
- Chernozems under virgin vegetation in the Alekhin State Biosphere Reserve;
- Paleolithic sites Kostenki and Divnogor’e with paleosols related to MIS-2 and MIS-3;
- Holocene floodplain soil-sedimentary sequences of the Don River.



World-famous Paleolithic site Kostenki (Photo: Kostenki 14).



Late Pleistocene loess-paleosol sequence exposed in Alexandrovskiy quarry.

D4. 2nd ASQUA Meeting: “Advances in the Quaternary of Interior Asia” in Ulan-Ude/Russia, 9-15 September 2013

<http://asqua2013.borea.ru/>

*Organizers: ASQUA (Asian Quaternary Association); Siberian Branch of the Russian Academy of Sciences
Co-chairs: Xiao Jule, Margarita Erbajeva, Kumai Hisao; Secretary: Nadya Alexeeva*

The main topics to be discussed will include:

- Stratigraphy and correlations of global biotic and abiotic events and signals in Eurasia with emphasis on the Interior Asian geological record;
- Quaternary chronostratigraphy and subdivisions, global chronostratigraphical correlation;
- Paleontology and biochronology of fossil mammals and plants;
- Geological and paleontological succession to define the boundaries between Quaternary subdivisions;
- Quaternary Environmental Dynamics of Eurasia in context of global change.

D5. INQUA Loess Focus Group Meeting 2013. In honour of Professor Ian Smalley: “Loess & Dust: Geography-Geology-Archaeology”, Leicester/UK, 10-12 September 2013

<http://inqua-loess.org/leicester2013.php>

Registration & payment until 26th July 2013, abstract submission until 16th August 2013

A meeting dedicated to interfaces between the various involved disciplines; also focussing on new regions where loess exploration and investigation is happening, geotechnical aspects of loess and new techniques to date and characterise loess material, and in particular aiming to look at the human/loess interface. Loess had a critical role to play in the development of human society.

Keynote speakers

R. Schaetzl: Loess deposits in the Midwestern United States: Geography matters!

Ian Smalley: Loess: then, now, tomorrow, eventually

Tributes to Ian Smalley will be paid by Claudio Vita Finzi and James Kwong.

Sessions will focus on the following topics:

1. A plenary session - in honour of Professor Smalley's research;
2. The reconstruction of loess environments through the Quaternary;
3. Landscape evolution and loess;
4. New chronological methods;
5. Loess geomagnetism;
6. Novel geochemical analytical techniques;
7. Geoarchaeology and loess;
8. Humans and dust in the modern landscape;
9. Eurasian loess
10. North American loess;
11. Loess around the Mediterranean.

**D6. International Workshop "Rates of Soil Forming Processes in Mediterranean Climate"
24-28 September 2013, University of Calabria in Arcavacata di Rende (near Cosenza)**
Second workshop of RAISIN, <https://ppsg2011.uni-hohenheim.de/94442>
Organizers: Fabio Scarciglia and Daniela Sauer

Abstract submission will be open until 15 July, registration will be open until 31 August.
Young scientists and scientists from low-income countries may apply for travel grants until 30 June.

Although the main focus of the workshop and field trip will be on Mediterranean soil development, contributions on soil forming processes in other climates are welcome as well.

Workshop Program

Monday, September 23:	Arrival at Arcavacata di Rende
Tuesday, Sep 24 and Wednesday, Sep 25:	Workshop each day two morning and two afternoon sessions incl. keynote talks, regular talks and discussion
Thursday, September 26:	Field trip to Rossano soil chronosequence (Ionian coast of Calabria), guided by Fabio Scarciglia
Friday, Sep 27 & Saturday, Sep 28:	Field trip to Metaponto soil chronosequence (Gulf of Taranto, Basilicata), guided by Daniela Sauer, incl. 2 nights at Hermes Hotel in Policoro (arrival on Sep 26, departure on 28), return to Cosenza in the evening of Sep 28
Sunday, September 29:	Departure from Arcavacata di Rende

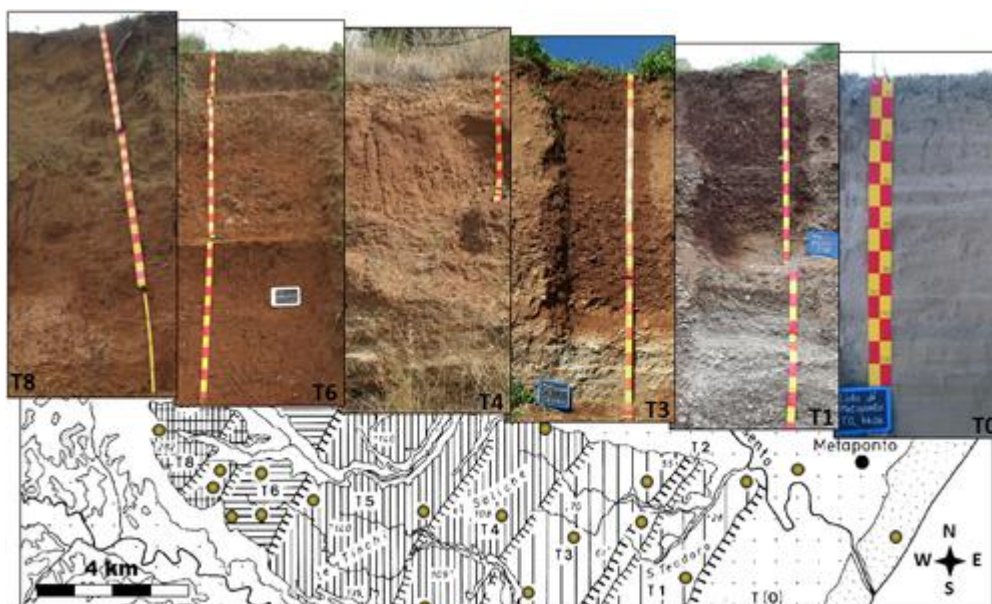
Confirmed keynote talks

Jennifer W. Harden (USA): Linking soil forming processes to carbon cycling: a study in contrasts

Markus Egli (Switzerland): Soil chronosequences in Alpine areas: possibilities and limitations for deriving rection rates

Daniela Sauer (Germany): Interplay of soil-forming processes, aeolian and geomorphic dynamics in the Mediterranean - the 730 ka Metaponto soil sequence, Basilicata, S Italy

Fabio Scarciglia (Italy): A comparison of Quaternary soil chronosequences from the Ionian and Tyrrhenian coasts of Calabria, southern Italy: Rates of soil development and geomorphic dynamics



Marine terrace sequence in the Metaponto area (Gulf of Taranto) with profile locations (yellow dots) and selected profiles (photos: Daniela Sauer; map of terraces from Brückner, 1980).

D7. Workshop "Soils and Dust in the Mediterranean", Ulm/Germany, 4-5 October 2013

<https://ppsg2011.uni-hohenheim.de/84832>

Organizers: Daniela Sauer and Annette Kadereit

**Abstract submission will be open until 15 July,
registration will be open until 31 August.**

Young scientists and scientists from low-income countries
may apply for travel grants until 30 June.

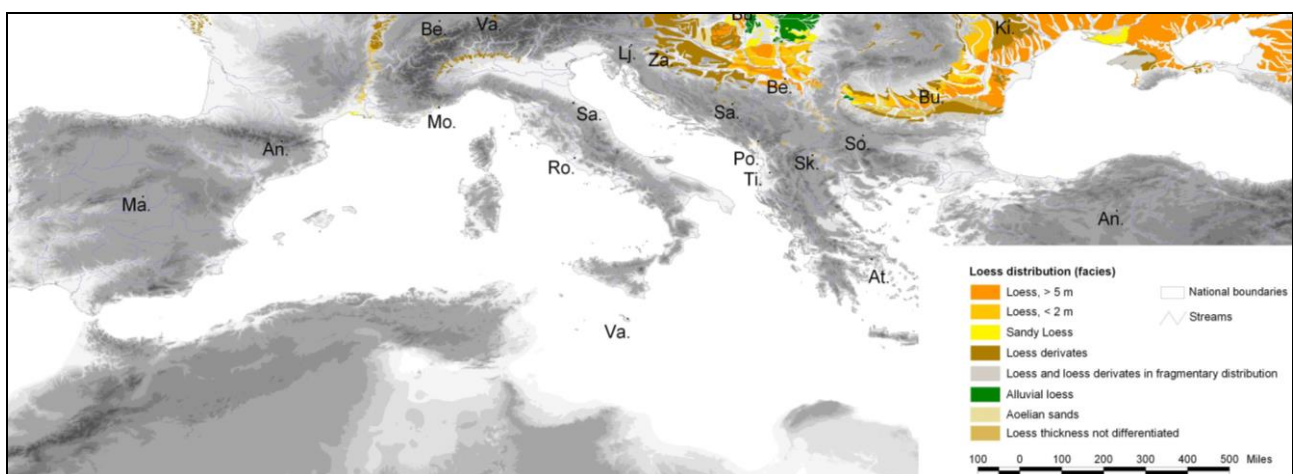
The workshop will be held during the Division 1 Conference in Ulm (see p. 18). Its format will be similar to that of the first AEOMED Workshop in Florence (10-12 October 2012):

Friday, 4 October: Workshop

Part of the time will comprise oral and poster presentations on aeolian sediments and additions to soils in the Mediterranean. Another part of the time will be reserved for discussing collaboration between research groups working in various Mediterranean areas. Possibilities for common efforts to improve our knowledge on aeolian sediments over the Mediterranean region, their occurrences, sources, trajectories, and their analytical identification will be discussed in the group. Known occurrences of loess and loess-like sediments that are not yet included in the loess map of Europe will be compiled.

Saturday, 5 October: Field trip

The topic of the field trip will be "Landscape history, soil development and paleolithic caves along the rivers Blau and Danube". The first highlights of the tour will be the karstic spring of the river Blau, followed by the world-famous palaeolithic caves „Geißenklösterle“ and „Hohle Fels“, where Christopher Miller (Tübingen) will present geoarcheological studies including micro- morphological analyses of the cave sediments. In the afternoon, we will visit a loess-paleosol sequence developed in last glacial loess sitting on the penultimate glacial terrace of the Danube river (photo to the right). Finally we will arrive at Mt. Bussen (767 m) consisting of molasse. During the penultimate glacial period it was surrounded by the alpine ice from three sides. We will study several soils developed on different parent materials including sandy molasse (Arenosol with distinct hydromorphic features whose genesis will be discussed) and penultimate glacial moraine at Mt. Bussen (Luvisol).



Mediterranean region on the "Map of loess and loess-like sediments in Europe" (Haase et al., 2007: *Loess in Europe - its spatial distribution based on a European Loess Map, scale 1:2,500,000. Quat. Sci. Rev.* 26, 9-10, 1301-1312).

D8. Symposia at the IUSS Division 1 Conference “Soils in Space in Time”, Ulm/Germany, 30 September – 5 October 2013

<https://iuss-division1.uni-hohenheim.de>

Local Organising Committee:

Karl Stahr, Marian Kazda, Reinhold Jahn, Thilo Streck, Ellen Kandeler, Daniela Sauer, Peter Schad, Holger Fischer, Ludger Herrmann, Martin Werth

There will be two paleopedological symposia:

Symposium #16: Qualitative and quantitative indicators of environmental changes in paleosols and polygenetic soils

Convener: *Elizabeth Solleiro Rebolledo (Mexico)*

This session focuses on mineralogical, chemical, isotopic and biological proxies of paleosols, which may be used as indicators for certain palaeo-environmental conditions. Contributions presenting such indicators for various types of environmental conditions are welcome. In addition, examples of palaeo-environmental reconstructions of particular regions based on such indicators may be presented.

Symposium #17: Soil forming processes - rates, thresholds and changes in rates over time

Conveners: *Daniela Sauer (Germany), Simone Priori (Italy)*

Knowledge about rates of soil-forming processes is essential for interpreting paleosols in terms of duration of periods of geomorphologically stable land surfaces during which soil formation could take place. Soil formation proceeds however not at uniform rates. Rates may change in different phases of soil formation and, in addition, different processes proceed at different rates and in different phases of soil formation (e.g. increase in humus in young soils and podzolization in older soils). Moreover, thresholds in soil formation (e.g. leaching of Ca or mobilization of Al in acid environments) may activate or cease a certain process (such as lessivage). The session focuses on rates of soil formation and on the identification of thresholds and changes in rates over time.

In addition, there will be one joint symposium of the IUSS Commissions 1.6 Paleopedology and 1.1 Soil Morphology and Micromorphology:

Symposium #26: Soil morphological indicators of past environments

Convener: *P. Kühn (Germany)*

Soil morphology at any scale gives a first clue for the formulation of hypothesis of soil formation processes, either present or past. Their recognition is a very powerful tool for understanding paleoenvironments, that can be useful to assess future changes in soils. The objectives of this symposium are to show current research on morphological and micromorphological evidences of relationships between past soil formation processes and environmental factors that lead to them.

D9. Session at American Geophysical Union’s 46th annual Fall Meeting in San Francisco, California, 9-13 December 2013: Earth’s Soils and Critical Zones as “Polygenetic Paleosols”

<http://fallmeeting.agu.org/2013/>

Time to a soil or a critical zone means duration but also the particular time in Earth’s history during which the soil/critical zone has developed. Most soils and critical zones have long enough lifetimes to have experienced highly variable climates, biota, and geomorphologies, and thus to be polygenetic. Even since the late Pleistocene, variable environments have forced soils and critical zones across thresholds (exhausting weatherable minerals) and others to take new trajectories altogether (accruing soil organic matter, loess, and illuvial salts or clays). Presentations and posters are invited that explore natural or human-altered soils and critical zones as polygenetic systems with archival properties that over time are accumulated or erased by variable environmental forcings.

Please contact Daniel Richter for more information, e-mail: drichter@duke.edu.

D10. Sessions at 20th World Congress of Soil Science, Jeju Island/South Korea, 8-13 June 2014

<http://www.20wcsc.org/>

Two sessions of Commission 1.6 Paleopedology and one joint session of Commissions 1.6 Paleopedology and 1.1 Soil Morphology and Micromorphology will be organized:

Session C1.6-1: Paleosols and Pedosedimentary Sequences for Understanding Impacts of Climatic Changes

Conveners: Alexander Makeev (Russia), Mohammed Rafi G. Sayyed (India)

Fragile global environmental conditions today urgently demand improving our understanding of past climatic changes and their impacts on terrestrial ecosystems. Paleopedological investigations can significantly contribute to this understanding. Predicting responses of terrestrial systems to present and future climatic changes requires an improved understanding of how the Earth's climate has evolved from cold snowball earth state to warm greenhouse state and how terrestrial systems and biogeochemical cycles responded to such changes in the past. Palaeo-environmental studies using paleosols as proxies allow for reconstructing these changes and responses. The chemical composition of mineral and organic matter in paleosols holds great potential to reconstruct regional palaeo-climatic and -environmental conditions. It is however important to understand the mechanisms that influence geochemical data preservation in the proxies. This session invites studies on past inorganic, biological and biogeochemical processes acting in paleosols and former weathering zones. In particular, proxy data-climate model inter-comparisons are encouraged. Contributions identifying extreme events or presenting suitable proxies for palaeo-precipitation, seasonality, palaeo-weathering, and related geochemical variations in paleosols are welcome.

Session C1.6-2: Quantitative palaeo-environmental proxies in paleosols

Conveners: Peter Kühn (Germany), Curtis Monger (USA)

Palaeopedological work used to be based mainly on interpreting paleosols in terms of palaeo-environmental conditions during their formation by comparing them to modern analogues and their environments. In addition to this important established approach, particularly in the past two decades, the number of attempts to identify quantitative proxies in paleosols has increased, and several promising approaches have been developed. We call for papers of all kinds of (semi-)quantitative palaeo-environmental and palaeoclimatic proxies in paleosols, including major, trace and rare earth element ratios, (geo-)chemical indices, analyses of iron-manganese nodules and pedogenic carbonates, stable isotopes of carbonates and other soil components, as well as biochemical markers such as alkanes, sugars and lipids, and biomarkers like phytoliths, pollen, vegetal and faunal macro- and micro-fossils. We welcome also contributions pointing to problems that we have to deal with in applying these quantitative approaches, such as diagenetic processes after paleosol burial, decomposition of soil organic compounds, and ambiguity of chemical indices for palaeo-climatic reconstructions (since they are also used for quantifying progressive soil development in soil chronosequences).

Session DS1: Micromorphological answers to palaeopedological and polypedogenetic questions

Conveners: Rosa Maria Poch (Spain), Daniela Sauer (Germany)

Specific micromorphological properties observed in paleosols and polygenetic soils may serve as valuable indicators of past environments. It is however essential that such micromorphological observations are appropriately interpreted in order to obtain reliable reconstructions of palaeo-environments. Thus, this session focuses on the interpretation and use of micromorphological palaeo-environmental indicators.

Soil properties depend on environmental conditions in which soils have formed. Hence, paleosols are archives of past environments. Micromorphological analysis is particularly valuable for identifying soil properties on a micro-scale that are indicative for specific environmental conditions. This tool is also valuable for identifying the polygenetic nature of surface soils because even if the major part of the solum has responded to a changing environment and has approached a new equilibrium corresponding to the present environment, micromorphological analysis may still identify some relict features that can be only explained by different former environmental conditions. Contributions presenting such micromorphological indicators for various types of environmental conditions are welcome. In addition, examples of palaeo-environmental reconstructions of particular regions based on such indicators may be presented.

D11. XIIIth Int. Symposium and Field Workshop on Paleopedology (ISFWP) „Soils in modern and past landscapes”, Toruń/Poland 2014

Main Organizer: *Michał Jankowski*

Topics: Soil genesis, paleopedology, soil geography, pedoarchaeology, soil classification

Program:

Day 1: Opening session, plenary session, oral and poster presentations
„Get gothic” – the Old Town tour
(optional presentation of soils forming on buildings: Edifisols)
Evening: Conference dinner in a gothic cellar

Day 2: Oral and poster sessions
Evening: Meeting at the fire
(optional presentation of soils formed on fortifications: Constructosols)

Days 3 and 4: Field workshop, proposed topics:

A – Soils on glaciofluvial terraces in the Toruń Basin
Rusty soil (Brunic Arenosol), neo-relictic Gleyic Podzol, Mucky soil (Umbric Gleysol),
Ochre soil (Rubric Arenosol)

B – Contemporary and buried soils in dunes of the Toruń Basin
Allerød soil paleo-catena (Katarzynka), contemporary Arenosols and sequence of buried
soils (Rudak), lateral podzolization (Chorańgiewka), optionally: Gąski archaeological site

C – Soils in young glacial landscapes (The Brodnickie Lakeland)
Eroded Luvisol, lithologically heterogeneous Luvisols (2 profiles), Histosols (undrained and
drained) and soils developed from limnic deposits (3 profiles)

D12. XIVth International Symposium and Field Workshop on Paleopedology (ISFWP), Lincoln/Nebraska, USA 2015

Organizers: *Peter Jacobs and R. Matt Joeckel*

In 2015 please consider attending an International Symposium and Field Workshop on Paleopedology (ISFWP) in Lincoln, Nebraska, USA. Nebraska is an ideal location to study paleosols in Quaternary loess deposits, along with Neogene and Cretaceous fluvial deposits. Preliminary plans include a multiple-day symposium with oral and poster presentations, a mid-meeting excursion, and a multiple-day excursion to observe Pleistocene and Holocene paleosols in loess and eolian sand deposits. Dates are not yet established, but the gathering will likely occur in July.

E. Upcoming summer schools

E1. 4th International Summer School on Paleopedology “Paleosols as a Source of Information about Past Environments”, Volodarka/Siberia, 30 July – 4 August 2013

Main organizer: *Maria Dergacheva, languages: Russian and English*

The summer school will be held in Volodarka, Altai Region (250 km South of Novosibirsk and 100 km South of Barnaul) on the banks of River Ob. The area is interesting because of its diverse landscape history, abundant paleosol outcrops and a mixture of recent and relict features in surface soils. It is a part of the extensive loess plateau famous for its loess-paleosol sequences providing a detailed record of the Pleistocene. Tectonic activity and erosion cycles produced a set of buried paleosols, surface soils and exhumed paleosols which can be observed in river exposures up to 50 m high. The school will consist of lectures and field master-classes.

Young scientists will present their research results during a special oral and poster session.

The lectures will cover the following topics:

- Paleopedology in the system of environmental sciences
- Morphology and micromorphology of paleosols
- Environmental reconstructions based on microbiomorphs in paleosols
- Humic acids as a memory of paleo-environments and isotopic composition of organic substances
- Soil carbonates as a record of pedogenetic processes in paleosols
- Microelements in paleosols as a source of information about paleo-environments
- Latest achievement of paleomagnetic studies
- Radiocarbon dating of paleosols

The field master classes will focus on the field study of buried and exhumed paleosols (morphology, field interpretation, sampling for different analyses, etc.).

E-mail: paleosol@yandex.ru

E2. 5th International Geochronology Summer School "Dating Anthropogenic and Natural Changes in a Fragile Alpine Environment" Bergün/Switzerland, 1-6 September 2013

Organizing Committee:

M. Egli (Uni Zurich), D. Brandová (Uni Zurich), P. Cherubini (WSL), H. Gärtner (WSL), S. Ivy-Ochs (ETH Zurich/Uni Zurich)

Topics to be covered in lectures, excursions and workshops include:

- **Dating techniques:** such as numerical methods (radiocarbon, exposure dating with cosmogenic nuclides, OSL, ¹³⁷Cs, ²¹⁰Pb, etc.); dendrochronology, ice-core chronologies, as well as relative methods like soil weathering and Schmidt-hammer technique
- **Reconstruction of environmental parameters** (using dendroecology, stable isotopes,)
- **Climate and landscape history**
- **Reconstructing geomorphic processes:** Avalanches, mud flows, land slides, rock fall, Forest fires, charcoal identification and dating.
- **Presentation of the participants own research**

List of Lecturers:

S. Ivy-Ochs (ETH Zurich/Uni Zurich), I. Hajdas (ETH Zurich), D. Brandová (Uni Zurich), P. Cherubini (WSL), M. Egli (Uni Zurich), H. Gärtner (WSL), S. Lowick (Uni Bern), M. Schwikowski (PSI), E. Eckmeier (Uni Bonn), E. Costantini (CRA-ABP, Firenze, Italy), D. Dahms (Uni Northern Iowa, USA) and others.

The Summer School is open to young researchers (PhD students and Post-Docs) worldwide. Participation is competitive and will be limited to a maximum of 20. The registration fee (600 Euro) includes accommodation (room sharing required), half board and lunch, excursion and teaching material.

DEADLINE FOR APPLICATIONS: 30 April 2013

On-line information about the course and the application procedure is available at

<http://www.geo.uzh.ch/microsite/geochronology/>

F. Paleopedological publications in 2012

F1. Paleopedological special issue of *Quaternary International*

Quaternary International Volume 265, a special issue entitled "Paleosols in soilscapes of the past and present" has been published on 28 June 2012. Guest editors are Peter Jacobs and Sergey Sedov.

Content

Peter Jacobs, Sergey Sedov: Paleosols in soilscapes of the past and present. Pages 1-2.

Peter A. Finke: Modeling the genesis of luvisols as a function of topographic position in loess parent material. Pages 3-17.

Daniela Sauer, Peter Finke, Rolf Sørensen, Ragnhild Sperstad, Isabelle Schüllli-Maurer, Helge Høeg, Karl Stahr: Testing a soil development model against southern Norway soil chronosequences. Pages 18-31.

A.J.A.M. Temme, J.D. Schaap, M.P.W. Sonneveld, G.A. Botha: Hydrological effects of buried palaeosols in eroding landscapes: A case study in South Africa. Pages 32-42.

Peter M. Jacobs, Joseph A. Mason, Paul R. Hanson: Loess mantle spatial variability and soil horizonation, southern Wisconsin, USA. Pages 43-53.

Asja Engovatova, Alexandra Golyeva: Anthropogenic soils in Yaroslavl (Central Russia): History, development, and landscape reconstruction. Pages 54-62.

Edoardo A.C. Costantini, Pierluigi Bucelli, Simone Priori: Quaternary landscape history determines the soil functional characters of terroir. Pages 63-73.

J.M. van Mourik, A.C. Seijmonsbergen, R.T. Slotboom, J. Wallinga: Impact of human land use on soils and landforms in cultural landscapes on aeolian sandy substrates (Maashorst, SE-Netherlands). Pages 74-89.

S. Stanchi, M. Freppaz, A. Agnelli, T. Reinsch, E. Zanini: Properties, best management practices and conservation of terraced soils in Southern Europe (from Mediterranean areas to the Alps): A review. Pages 90-100.

Richard L. Burnett, Richard E. Terry, Marco Alvarez, Christopher Balzotti, Timothy Murtha, David Webster, Jay Silverstein: The ancient agricultural landscape of the satellite settlement of Ramonal near Tikal, Guatemala. Pages 101-115.

Michał Jankowski: Lateglacial soil paleocatena in inland-dune area of the Toruń Basin, Northern Poland. Pages 116-125.

Alexey Rusakov, Sergey Sedov: Late Quaternary pedogenesis in periglacial zone of northeastern Europe near ice margins since MIS 3: Timing, processes, and linkages to landscape evolution. Pages 126-141.

Birgit Terhorst, Franz Ottner, Karin Wriessnig: Weathering intensity and pedostratigraphy of the Middle to Upper Pleistocene loess/palaeosol sequence of Wels-Aschet (Upper Austria). Pages 142-154.

Hema Achyuthan, Navin Shankar, Martina Braidà, Syed Masood Ahmad: Geochemistry of calcretes (calic palaeosols and hardpan), Coimbatore, Southern India: Formation and Paleoenvironment. Pages 155-169.

Stephen Wagner, Norbert Günster, Armin Skowronek: Genesis and climatic interpretation of paleosols and calcretes in a plio-pleistocene alluvial fan of the costa blanca (SE Spain). Pages 170-178.

Andrea Vacca, Concetta Ferrara, Ruggero Matteucci, Marco Murru: Ferruginous paleosols around the Cretaceous-Paleocene boundary in central-southern Sardinia (Italy) and their potential as pedostratigraphic markers. Pages 179-190.

R. Gerlach, P. Fischer, E. Eckmeier, A. Hilgers: Buried dark soil horizons and archaeological features in the Neolithic settlement region of the Lower Rhine area, NW Germany: Formation, geochemistry and chronostratigraphy. Pages 191-204.

F1. Book: “Mid-Latitude Slope Deposits (Cover Beds)” released on 21 May 2013

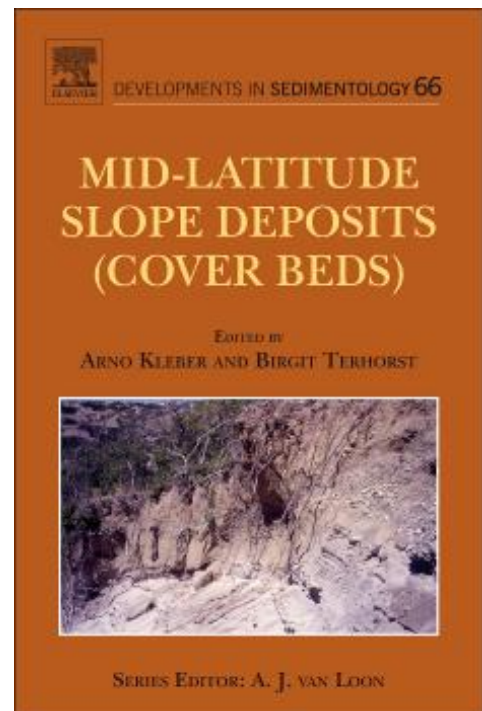
Elsevier. Developments in Sedimentology, Vol. 66, 320 pages.

Editors: Arno Kleber and Birgit Terhorst

Content

- 1 Introduction
- 2 Subdued mountains of Central Europe
- 3 Other case studies
- 4 Influence of cover beds on soils
- 5 Influence of cover beds on slope hydrology
- 6 Influence of cover beds on vegetation and biodiversity
- 7 Geo-technical properties of cover beds
- 8 Conclusions and future research demands

Since the 1960s the development of ideas in Germany regarding certain types of slope deposits - i.e., those covering entire slopes or major parts of them ('cover beds') - have taken an individual path that differed from approaches elsewhere. [...] The book aims at reviewing and summarizing the current knowledge on cover beds with a strong concentration to Central Europe, but including several regional case studies from other areas, and various merely final results but ongoing discussion. [...] It offers a unique compilation of several decades of slope-deposit research. It addresses ecological consequences on soils, slope water dynamics, and slope failures.



F2. GSA Special Publication

The Geological Society of America (GSA) has recently published Special Publication 490, titled “Mima Mounds: The Case for Polygenesis and Bioturbation”. The Table of Contents can be accessed at:

<http://www.geosociety.org/bookstore/toc/spe490.htm>

Print copies of the book are available at:

<http://rock.geosociety.org/Bookstore/default.asp?oID=0&catID=9&pID=SPE490>

Several parts of the volume—Dedication, Introduction, Foreword to Appendix A, Appendices C-F, and abstracts of all chapters—are downloadable at: <http://specialpapers.gsapubs.org/content/490>

Producing the volume on soil mounds, which are planet-wide in occurrence, involved several decades’ work by contributors, editors and referees dedicated to bring polygenic-biogenic points of view undergirded by solid scientific standards to a topic too long buffeted by controversy—the origin of mima-pimple-prairie-natural mounds. Understanding how soil mounds form provides an appreciation of the notable role of animal bioturbations as a collectively fundamental and long under-emphasized array of pedogenic processes.

F3. Book: “Surface paleosols of loess areas in the center of Russian Plain” released on 20 December 2012.

Author: Alexander Makeev. MOLNET publishing house, 260 pages and 40 color insets (in Russian).

Genesis and geography of soils of high flat interfluvial areas covered by loess mantles within the periglacial area of the Russian plain have been studied with regard to landscape evolution and final stages of loess sedimentation. A comparative analysis of soils in forest, forest-steppe and steppe areas is presented. An abundance of relic features in day-surface soils allows regarding them as surface paleosols. Constitution of upper loess-paleosol sequences have been studied within the profile of surface paleosols. It was established, that surface paleosols differs depending on their position in paleocryogenic microrelief and the type of loess sediments. Surface paleosols are syngenetic to final stages of loess accumulation. New data on agrogenic evolution of soils and landscapes are presented.

F4. Book chapter

Kutilek, M. and Nielsen, D.R. (2012): *Soils, Climate, and Human Adaptability. Review of History in Holocene.* Chapter 15 in: Eric Brevik (2012): *Soils and Human Health.* CRC Press. Taylor and Francis Group, p. 323-343. Please, contact Miroslav Kutilek for pdf, e-mail: miroslav.kutilek@volny.cz

G. Paleopedological publications in preparation

- G1. Special Issue of *Catena*: papers of Conference “Landscapes & Soils with Time” 2011
- G2. Section in Special Issue of *European Journal of Soil Science*: papers of session at Eurosoil 2012
- G3. Special Issue of *Quaternary International*: papers of AEMED and RAISIN Workshops
- G4. Special Issue of *Journal of Soils and Sediments*: papers of session “Soil formation and weathering in time and space” at EGU 2013

H. News from regional and national paleopedology groups

H1. New status of Paleopedology in Russia

In 2012 Dokuchaev Soil Science Society started to reform its structure in the direction of better conformity with the structure of IUSS. Four Divisions were proposed with Paleopedology as a part of Division 1 – Soils in Time and Space. The level was raised from the Working Group to Commission. Alexander Makeev was elected as a Chairman of Paleopedology Commission at the VI Russian Soil Congress in Petrozavodsk, August 2012. The Commission Secretary is Ilya Shorkunov. The commission web site will be announced shortly.

H2. Round Table “Geology, paleo-surfaces and landscape evolution. Its importance for genesis, cartography and use of soils”, Mar del Plata/Argentina, 16-20 April 2012

This Round Table was organized in the frame of the XIX Latin American Congress of Soil Science (XIX Congreso Latinoamericano de la Ciencia del Suelo). Ancient deep soil and weathering mantles developed under humid tropical climate on the paleo-landsurfaces of Gondwana are announced as the main topic of this event.

The following talks were presented:

Jorge Rabassa (CADIC-CONICET, Argentina): *Paleosuperficies Gondwánicas: Evolución, génesis, distribución y edad* (Paleosurfaces of Gondwana: Evolution, genesis, distribution and state)

Elizabeth Solleiro (UNAM, México): *Suelos, paleosuperficies y dispersión de organismos: Ocupación de megafauna y poblamiento humano del cuaternario tardío en México* (Soils, paleosurfaces and dispersion of megafauna and probably humans of the Late Quaternary in Mexico)

Moderador: Dr. Pablo Bouza.

Paleopedology is now present on regular basis in the Latin American Congresses.