

no. 111



International Union of Soil Sciences



International Union of Soil Sciences (IUSS)

The IUSS Bulletin is the official Newsletter of the International Union of Soil Sciences. It is freely distributed through the IUSS website and a limited number of copies are printed. All contributions are welcome and should be sent to the editor.

Editor Dr. Alfred E. Hartemink
ISRIC – World Soil Information
P.O. Box 353
6700 AJ Wageningen
The Netherlands
+31 (0) 317 471 713 phone
+31 (0) 317 471 700 fax
E-mail: alfred.hartemink@wur.nl

Book Review Editor Drs. J. Hans V. van Baren
ISRIC – World Soil Information
P.O. Box 353
6700 AJ Wageningen
The Netherlands
+31 (0) 317 471 711 phone
+31 (0) 317 471 700 fax
E-mail: hans.vanbaren@wur.nl

ISSN 0374-0447

Copyright IUSS, PO Box 353, 6700 AJ, Wageningen, The Netherlands

Orders to Dr Alfred Hartemink
IUSS, PO Box 353, 6700 AJ, Wageningen, The Netherlands

Contents

Editorial (A.E. Hartemink)	3
IUSS Alerts June 2007 – October 2007	4
You are earth, you feed on earth and you'll return to earth (G. Certini, R. Scalenghe)	7
Soils on the web: Te Ara (D.J. Lowe, S. Nathan)	10
Hydropedology: Concepts and opportunities (H. Lin)	12
Five Questions to a Soil Scientist	
Five questions to Peter Finke (Belgium)	16
Five questions to Diana Wall (USA)	17
Five questions to Barbara Wick (Germany)	18
Five questions to Bob MacMillan (Canada)	19
The favourite soil science books Peter Leinweber (Germany)	20
Obituary G. Humphreys	21
Reports of Meetings	23
Upcoming Meetings	39
New Publications (H. van Baren)	40
IUSS Honorary members	51



Editorial

Earlier this year I had the good fortune to spent three weeks at the Faculty of Agriculture, Food and Natural Resources of the University of Sydney, Australia. Although primarily intended to work on a grant proposal, it was exciting to see how much soil research Alex McBratney and his group have going. And it includes all: field work, laboratory studies and a great deal of desk work. Some weeks after my visit to Sydney, I was in Rwanda where a Wageningen University consortium is supporting the establishment of a MSc in soil science and agroforestry at the National University of Butare, Rwanda. As part of that project, we develop a soil science curriculum and supervise PhD students. Clearly, Butare is quite a different environment from Sydney. But there are also a number of things in common.

In Sydney as well as Butare, I see a lot of hardworking, young students and professional working on soils and aiming to tackle problems that land users encounter. In doing so, they apply the best available technologies and at the same time develop new methodologies. Of course, there is a difference in applied and fundamental work but such distinction is in fact irrelevant. Problems from cotton-based farming systems in New South Wales or coffee and maize systems in Rwanda are not different - what matters is that soils are studied, that the frontiers of our knowledge are moved, and that soil scientists contribute to society and in the end: to a better world.

I bring this up to illustrate something that many of us discuss frequently: the current state of soil science and its future directions. There are appallingly negative views and they are merely based on student numbers in a few countries. Indeed, student numbers have decreased, departments of soil science have been renamed and sometimes have been merged or closed. That is one side of the story and some prophets think that soil science is about to die as a discipline.

What we see, however, is a new generation of soil scientists that is perhaps partly submerged in other departments but that delivers excellent work. Just look through any recent issue of global soil science journal. Note that more and more is being published (obviously some is dilution and repetition) but a clear indication that a lot of work is going on and there are many papers that come from non-traditional soil science groups or department. Soil science has branched out and entered other scientific fields. At the same time, many soil science papers appear in non-traditional soil science journals. It shows that soil science is very alive! We see that other, non soil scientists, start doing soil research. Some see a danger but many would agree that it are tremendous opportunities and that we should offer our expertise to such groups.

The IUSS has a key role to play in all these developments. Whether you are based in Sydney or Butare it is important that you feel part of the global soil science community and the IUSS, which supports all soil science activities across the globe. The IUSS offers a forum (either in the Alert, Bulletin or in meetings) to have your voice heard, to exchange ideas and to move the field of soil science forward. The IUSS strives to be as dynamic as our evolving discipline, but much depends on the involvement of its members. May I invite you to participate in IUSS activities, promote soil science and show that the apocalypse of soil science is sheer nonsense!

Alfred Hartemink
Deputy Secretary General IUSS
Wageningen, October 2007
alfred.hartemink@wur.nl

IUSS Alerts June 2007 – October 2007

International Union of Soil Sciences



Information for and from the global soil science community

IUSS Alerts are e-mailed to more than 12,000 people in over 100 countries. If you have information to share please send it to alfred.hartemink@wur.nl Below are the still relevant contributions that appeared in the IUSS Alerts between June 2007 and October 2007.

Core Historical Literature of Agriculture



The **Core Historical Literature of Agriculture (CHLA)** is a core electronic collection of agricultural texts published between the early nineteenth century and the middle to late twentieth century. Full-text materials cover agricultural economics, agricultural engineering, animal science, crops and their protection, food science, forestry, human nutrition, rural sociology, and soil science. Scholars have selected the titles in this collection for their historical importance. Current online holdings: Pages: 850 264 Books: 1 849, Journals: 6 (288 Volumes). More info <http://chla.library.cornell.edu/>

Global soil maps and reports on-line



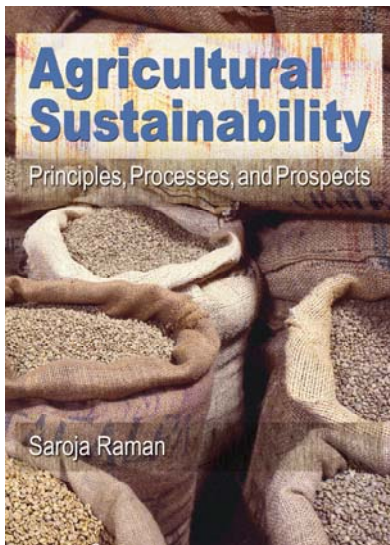
ISRIC - World Soil Information has built up a collection of more than 20 000 reports, books and maps, as well as digital databases on soil and land resources. The ISRIC - World Soil Information Database include: on-line access to over 3500 soil maps; over 110 full-text reports (PDF); country-specific searches based on Google maps; and a pull-down menu with soil science links. Click www.isric.org for further information.

Soil implications of global environmental change - Proposal for a new IUSS Working Group -

This is a call by Dan Yaalon to the soil science community to establish a Working Group on the Pedological Implications of Environmental Change caused by Global Warming and Human Activities on Soils and Landscapes, with special reference to countries in the tropics and coastal regions which are apparently most threatened by these changes. The objective and mission of the proposed Working Group would be not only to monitor and model the effect on soils accompanying the environmental change but especially to devise best ways of soil system adaptation to these human effects, to cooperate with and to advise various international and regional organizations on these matters concerning soils and pedological aspects. Soil people need to be heard. The Chair of IUSS Commission 1, Ahmet Mermut, has agreed to prepare an appropriate document and program for presenting the proposal to the IUSS Council for official approval. Actual proposals for relevant activity and participation in the Working Group should contact at mermut@skyway.usask.ca



New book:
Agricultural Sustainability: Principles, Processes, and Prospects



Agricultural Sustainability: Principles, Processes, and Prospects by Saroja Raman, PhD, provides a comprehensive examination of all facets of agricultural sustainability, beginning with the history of the evolution of the concept to the present. Challenges to sustainability are clearly presented along with practical strategies to counter prospective problems. This vital resource considers options for the future, as well as reviewing past approaches for their value in today's world. The book is extensively referenced and includes figures and charts to clearly explain data.

Publication Date: 2006 Publisher: The Haworth Press, Inc.
US Dollars \$69.95 soft cover. ISBN-13: 978-1-56022-311-5. US Dollars \$89.95 hard cover. ISBN-13: 978-1-56022-310-8. 474 pp. with index. Includes an Instructor's Manual (available for faculty only).

Soil Science Society of East Africa Conference

The 24th Annual Conference of the Soil Science Society of East Africa (SSSEA) will be held on 26-30th November 2007 in Embu, Kenya. The event will draw scientists from research organizations, universities, non-governmental organizations, farmers' groups and



international soil related organizations operating in the East African region. The theme of the Conference will be: "Improved Livelihoods through Applied Soil Science and Land Management". Abstracts are to be submitted in both hard and electronic version or as e-mail attachment by 30 August, 2007. The deadline for submission of full papers is on 15th October, 2007. Send your abstract/paper/posters to: SSSEA Secretariat, Kenyan Chapter, P.O. Box 14733-00800, Nairobi,

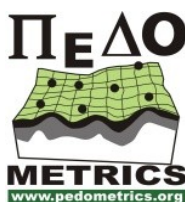
Kenya. Email to both of these addresses: kss@iconnect.co.ke and geokironchi@uonbi.ac.ke

Review of FAO



Recently, there has been an Independent External Evaluation of the Food and Agriculture Organization of the United Nations. The draft report (2.5 Mb, 395 pp) can be downloaded from the website www.fao.org and contains several comments of interest to the global soil science community. One of the recommendations: "Lands and soils should be given greater priority."

New issue of Pedometron



A new issue (number 22) is available from the www.pedometrics.org and www.iuss.org. In this issue an introduction to Tübingen where the biennial meeting of the Pedometrics commission is held, Elisabeth Bui has look at Dokuchaev and the zonal soil concept and there are contribution on self citation in pedometrics, the art of ploughing, digital soil mapping and soil science, on pyrometrie and pedomathemagica, and much more. As always: Happy reading!

19th World Congress of Soil Science - Australia



The 19th World Congress of Soil Science will be held at the Brisbane Convention and Exhibition Centre, 1 to 6 August 2010.

The Congress, held every four years, presents a global forum at which all those involved in Soil Science can meet with scientists, researchers, academics and professionals to discuss and find Soil Solutions for a Changing World. Details of the 19th World Congress of Soil Science will be regularly updated on the website www.19wcss.org.au Please check register your interest to participate and you will be kept informed.

International Crop Nutrition Award 2008

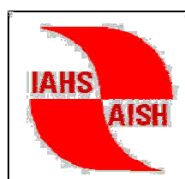


In its effort to promote research in the field of efficient, balanced and environment friendly fertilization, the International Fertilizer Industry Association (IFA) grants every year the IFA International Crop Nutrition Award for research that has led to significant advances in crop nutrition and that has been communicated successfully to the farmer in the form of practical recommendations.

Any individual researcher involved in crop or soil science is eligible. Applications must be submitted to an IFA member by 15 January 2008, and nominations by IFA members must be forwarded to the IFA Secretariat by 31 January 2008. The candidates will be judged by an independent selection panel on the basis of research quality, originality and practical application.

The recipient of the Award will receive € 10,000 and will be invited as a guest to the IFA Annual Conference in Vienna, Austria, from 19 to 21 May 2008. The recipient will also be sponsored to participate in one international conference during the same year. More info click http://www.fertilizer.org/ifa/aw_info.asp

New books from the International Association of Hydrological Sciences



Evaporation

by John Gash & Jim Shuttleworth, the second volume in the Benchmark Papers in Hydrology Series is now published. ISBN 978-901502-98-5 (2007) A4 format, softback, 526 + x pp., £40.00

A New Focus on Groundwater–Seawater Interactions

Edited by Ward Sanford, Christian Langevin, Maurizio Polemio & Pavel Povinec
IAHS Publ. 312 (2007) 978-1-901502-04-6 344 + x pp, price £64.00

Quantification and Reduction of Predictive Uncertainty for Sustainable Water Resources Management

Edited by Eva Boegh, Harald Kunstmann, Thorsten Wagener, Alan Hall, Luis Bastidas, Stewart Franks, Hoshin Gupta, Dan Rosbjerg & John Schaake
IAHS Publ. 313 (2007) ISBN 978-1-90150278-09-1 508 + iv pp. price £87.00

Water Quality and Sediment Behaviour of the Future: Predictions for the 21st Century

Edited by Bruce W. Webb & Dirk De Boer. IAHS Publ. 314 (2007) ISBN 978-1-901502-14-5; 322 + x pp. price £62.00



Remote Sensing for Environmental Monitoring and Change Detection

Edited by Manfred Owe & Christopher Neale. IAHS Publ. 316 (2007) ISBN 978-1-901502-24-4, 288 + viii pp. Price £55.00

Please order, or ask your library/department to order from Jill Gash:

- IAHS Press, Wallingford, Oxfordshire OX10 8BB, UK
- jilly@iahs.demon.co.uk

Heavy metals in European soils



New maps are online that show estimated total heavy metal concentrations of eight metals (arsenic, cadmium, chromium, copper, mercury, nickel, lead and zinc) using 1588 geo-referenced topsoil samples from the European geochemical database. The concentrations were interpolated using block regression-kriging. Nice feature: The maps can be viewed in Google earth. See: <http://eusoiils.jrc.it/foregshmc/>

El futuro de la ciencia del suelo

The IUSS book "The Future of Soil Science" has been translated in Spanish by Dr. Miguel Angel Segura Castruita, Professor of Soil Science at the Instituto Tecnológico de Torreón in México. The book contains the views from 55 soil scientists in 28 countries and is a palette of opinions and views reflecting great diversity but also several commonalities. The English and Spanish version can be freely downloaded from the IUSS website – see www.iuss.org

"You are earth, you feed on earth, and you'll return to earth"

Giacomo Certini

Dipartimento di Scienza del Suolo e Nutrizione della Pianta, Università di Firenze, Piazzale delle Cascine 28, 50144 Firenze, Italy

Riccardo Scalenghe

Dipartimento di Agronomia, Università di Palermo, Viale delle Scienze 13, 90128 Palermo, Italy

The importance of soil to humankind as producer, carrier, filter, and buffer is currently underlined (Various Authors 2004; Bouma 2006). We feel, however, that soil deserves wider consideration also by virtue of other less obvious functions that fulfill ancestral sanitary, psychological, and social humans' needs. "Terra es, et de terra vivis, et in terram reverteris" ("You are earth, you feed on earth, and you'll return to earth") stated Saint Bernard of Clairvaux (1091-1153) in his work *Meditationes piissimae de cognitione humanae conditionis*. As a matter of fact, our relationship with soil lasts from birth to death, often unconsciously.

The first contact with soil can be the regular and intentional consumption of it, *geophagy*, which is still practiced by pregnant women and children worldwide (Wilson 2003). "Edible" earth may supplement poor-diets (Hooda et al. 2004) and is purchased in markets or taken from termite mounds, hut walls, and riverbeds. Adding earthy material to toxic or bitter foods to enable their consumption is a widespread practice (Johns and Duquette

1991). Carbonates have an obvious antacid effect, while some types of clay are even efficient at removing radionuclides from gastric juices (Barth and Bruckner 1969). Furthermore, it must be emphasized that much of the microflora of the gut that builds up resistance to diseases is derived originally from soil. Just from the soil Selman A. Waksman isolated the streptomycin, the first antibiotic active against tuberculosis (Waksman and Woodruff 1941). In recognition for his discovery, Dr Waksman was awarded the Nobel Prize in Medicine in 1952. However, realistically there is a great deal of literature reporting negative effects of geophagy, such as anaemia (Stokes 2006), chronic poisoning by heavy metals (Sheppard 1998), intestinal occlusion (Yé et al. 2004), perforation of the colon (Woywodt and Kiss 1999), and infections with intestinal helminthes (Luoba et al. 2005).

If the internal protective role of soil toward humans is debatable, undeniable is the external role, from both a factual and psychological point of view. Throughout history, most societies have used masks composed of earth materials to disguise or protect the face in battle, theatrical performances, or parties. Nowadays, clay facemasks are used for therapeutic or aesthetic reasons, since they stimulate the circulation of the blood and lymph systems, remove dead skin cells, absorb surface fats, tone and strengthen the connective tissues (Carretero 2002; Poensin et al. 2003). More importantly, soil products are used for protection for humans in the guise of houses. An estimated 1.5 billion people live in houses constructed of unfired earth (Keefe 2005). Plinthite (Gr. *plinthos*, brick) is a iron-rich and humus-poor soil horizon that simply requires to be cut into blocks and left to air-dry to form hard bricks. Soil houses are virtually fireproof and can withstand moderate earthquake shocks thanks to their ductility. Furthermore, the exhalation rate of dangerous radon (Wakefield and Kohler 1991; Law et al. 2000) from adobes is much less than that from concrete or other building materials (Minke 2006). Remarkable are the advantages of using such adobes in terms of energy saving, taking into account that the embedded energy required to produce one cubic metre of building material amounts to 10 kWh m⁻³ for sun-dried soil, 590 kWh m⁻³ for perforated fired bricks, 800 kWh m⁻³ for concrete blocks, 2640 kWh m⁻³ for ordinary Portland concrete (Keefe 2005). As a consequence, soil buildings are in increasing demand in many countries (Minke 2006). Soil contributes to saving energy also when placed untreated over the roofs and turfed, providing efficient thermal insulation (Takakura et al. 2000).

Soil can also fulfil non-primary needs of humans, such as that of expressing creativity. *Nazca Lines* are hundreds of gigantic individual figures, ranging in complexity from simple lines to stylized human and animal figures drawn on the **Nazca Desert, Peru**, between **200 BC** and **700 AD**. These features, the longest of which is nearly 270 m, were made by removing the **iron oxide** coated pebbles that cover the surface of the desert and that contrast with the light-colored earth underneath. Much more recent is *Marree Man*, the largest manmade artwork in the world. This geoglyph depicts a 4.2-km high man holding a **boomerang** and was made in Australia by anonymous creators using a 2.5-m wide, eight-tine **plough** attached to a tractor. The use of soil in art has not been surpassed by the development of more sophisticated materials. In contrast, it has experienced a revaluation thanks to contemporary art (Fig. 1). Jean Dubuffet coined the term "art brut" to indicate an art free from intellectual implications, appearing primitive and child-like. Dubuffet himself, Burri, Donati, Fautrier, Mathieu, Soulages, and Tàpies used bulk soil, single size fractions of soil, or tar in their artworks. "Earth art" is a form of art come to prominence in the late 1960s, with personalities such as Heizer, Long, Oppenheim, and Smithson. Earth art uses items from the natural environment, such as soil and rocks, and "earthworks" are prepared in the open air and left weathering there.

After affecting several aspects of life, our final contact with soil in most cases is burial. Soil plays a crucial role in preventing spread of germs from corpse decomposition and, thus, risk of infections for living beings. The decay of our remains within soil implies formation of a discrete, ephemeral 'hot spot' of biological activity directed towards the slow release of elements to the wider ecosystem (Carter et al. 2007). Part of "our" carbon is transformed into adipocere, a mix of waxy grave substances that reside in soil for several centuries (Berstan et al. 2004) and that could be viewed as our last, small, personal contribution to counteract global climate change, the present-age bogeyman.



Fig. 1 In 1998, soil rose to the dignity of the masterpiece per se thanks to Maurizio Cattelan: 8x5x5-m soil cube sustaining an olive tree at permanent collection of Castello di Rivoli, Turin, Italy (photo courtesy of Museo d'Arte Contemporanea)

References

- Barth J, Bruckner BH (1969) Binding properties of clays with ^{134}Cs in artificial rumen and in simulated abomasal and intestinal fluids, and uptake of ^{134}Cs by rumen microflora. *J Agr Food Chem* 17:1344–1346
- Berstan R, Dudd SN, Copley MS, Morgan ED, Quye A, Evershed RP (2004) Characterisation of bog butter using a combination of molecular and isotopic techniques. *Analyst* 129:270–75
- Bouma J (2006) Soil functions and land use. p. 211–221. In: Certini G, Scalenghe R (eds) *Soils. Basic Concepts and Future Challenges*. Cambridge University Press, Cambridge, UK, pp211–221
- Carretero MI (2002) Clay minerals and their beneficial effects upon human health. A review. *Appl Clay Sci* 21:155–163
- Carter DO, Yellowlees D, Tibbett M (2007) Cadaver decomposition in terrestrial ecosystems. *Naturwissenschaften* 94:12–24
- Hooda PS, Henry CJK, Seyoum TA, Armstrong LDM, Fowler MB (2004) The potential impact of soil ingestion on human mineral nutrition. *Sci Total Environ* 333:75–87
- Johns T, Duquette M (1991) Detoxification and mineral supplementation as functions of geophagy. *Am J Clin Nutr* 53:448–56
- Keefe L (2005) *Earth building. Method and materials, repair and conservation*. Taylor and Francis, London, UK
- Law GR, Kane EV, Roman E, Smith A, Cartwright R (2000) Residential radon exposure and adult acute leukaemia. *The Lancet* 355:1888
- Luoba AI, Geissler PW, Estambale B, Ouma JH, Alusala D, Ayah R, Mwaniki D, Magnussen P, Friis H (2005) Earth-eating and reinfection with intestinal helminths among pregnant and lactating women in western Kenya. *Trop Med Int Health* 10:220–27
- Minke G (2006) *Building with earth: design and technology of a sustainable architecture*. Birkhäuser, Basel, CH
- Poensin D, Carpentier PH, Féchoz C, Gasparini S (2003) Effects of mud pack treatment on skin microcirculation. *Joint Bone Spine* 70:367–370
- Sheppard SC (1998) Geophagy: who eats soil and where do possible contaminants go? *Environ Geol* 33:109–14
- Stokes T (2006) The earth-eaters. *Nature* 444:543–544
- Takakura T, Kitade S, Goto E (2000) Cooling effect of greenery cover over a building. *Energ Buildings* 31:1–6
- Various Authors (2004) *Science* 304:1613–1637
- Wakefield M, Kohler JA (1991) Indoor radon and childhood cancer. *The Lancet* 338:1537–1538
- Waksman SA, Woodruff HB (1941) *Actinomyces antibioticus*, a new soil organism antagonistic to pathogenic and non-pathogenic bacteria. *J Bacteriol* 42:231–249
- Wilson MJ (2003) Clay mineralogical and related characteristics of geophagic materials. *J Chem Ecol* 29:525–547
- Woywodt A, Kiss A (1999) Perforation of the sigmoid colon due to geophagia. *Arch Surg* 134:88–89
- Yé D, Kam K, Sanou F, Traoré SS, Kambou S, Yonaba C, Dao F, Sawadogo A (2004) Occlusion intestinale et géophagie chez un garçon de 14 ans. *Arch Pédiatrie* 11:461–62

Soils on the web: Te Ara

David J. Lowe

Department of Earth and Ocean Sciences, University of Waikato, Hamilton
(d.lowe@waikato.ac.nz)

Simon Nathan

Science Editor, Te Ara, Ministry for Culture and Heritage, Wellington
(Simon.Nathan@mch.govt.nz)

Te Ara or “the pathway” is the new online *Encyclopaedia of New Zealand*, the world’s first purpose-written online encyclopaedia. The general site address is www.teara.govt.nz. Te Ara is published by the Ministry for Culture and Heritage with the general editor being eminent social historian Jock Phillips, appointed in May 2002. Work began on the project in July 2002 and so far three of nine broad themes have been published: “New Zealanders” (launched 8 February 2005), “Earth Sea and Sky” (12 June 2006), and “The Bush” (24 September 2007). Photographs, sounds, moving images, documents, graphs and maps are



combined with text. Links provide pathways to the digital collections of libraries, archives and museums around the country. Te Ara allows for the inclusion of community contributions such as photographs, oral histories, or updates of information.

Te Ara is first New Zealand government-sponsored encyclopaedia since the three-volume *An Encyclopedia of New Zealand* (edited by A.H. McLintock) was published in 1966. At the planning stage it was decided to design it specifically for the internet because that is where many people now seek information. Although other encyclopaedias are available on the internet, they are almost all printed versions that have been digitized. That Te Ara has been designed for the internet offers many advantages:

- Information can be corrected or updated
- Electronic files such as video clips can be included
- It is freely available anywhere in the world
- Many more illustrations can be used than in a print version
- Links to other websites can be incorporated

Te Ara is a unique, authoritative source of information on New Zealand topics. Articles are prepared by or in conjunction with subject specialists and then reviewed and edited. All the entries with substantial Maori content have been translated into Maori. Te Ara is immediately accessible at school, in the work place, in public libraries, or at home. Although it works best with broadband, it is designed to be used with slower dial-up connections. Abundant illustrations and video clips make it an attractive site to view. Currently the site receives over 6,000 visitors a day.

Information in Te Ara is layered to help make it accessible to a wide range of people. Language in the text is aimed at the average newspaper reader, avoiding technical jargon as far as possible. Every article has a "Short Story" – a one-page summary written in simple English for younger children or those whose first language is not English. Browsers can read the text and open up accompanying illustrations as they go, or work through all the illustrations in a separate gallery. Every page, or an entire article, is easily downloaded in a printable format. For those who want more information, each article has a "Further Sources" section, with links to up to half-a-dozen relevant websites, as well as books. Parts of Te Ara are being published in book form, for example "Maori Peoples of New Zealand" was published in 2006 and "Living on the Edge: Natural Hazards in New Zealand" is being published in November this year by David Bateman Ltd in association with the Ministry for Culture and Heritage.

The latest theme includes articles on soil science by Allan Hewitt and Phil Tonkin. Allan provides an overview entitled "Soils" under the broad heading "Landscapes" (Hewitt 2007). Phil's history of soil science in New Zealand (a longer version appeared in two earlier issues of *NZ Soil News* this year) is summarised in "Soil Investigations" under the heading "Understanding the Natural World" (Tonkin 2007) (e.g. see Fig. 1). A fascinating personal account of Charles Wright's early days as a pedologist/ecologist in New Zealand 1936-1958 is documented on a PDF link with the latter article.

Many other profusely illustrated and wide-ranging articles relevant to geosciences are available in "The Bush" such as wetlands, lakes, geomorphology, and perceptions of landscapes. Similarly, the theme "Earth, Sea and Sky" includes aspects of the marine realm, natural resources, and the shaping forces such as geology and climate and associated natural hazards and disasters. The theme "New Zealanders" comprises articles on Maori tribes and later immigrant groups who settled in New Zealand. It also includes articles such as Pacific migration, canoe navigation, and the timing of initial Polynesian settlement. There are also sections in Te Ara entitled "New Zealand in Brief", "New Zealand Peoples", and "Places", the last being a series of articles on 22 regions in New Zealand (such as Bay of Plenty or Canterbury), of which seven are now available.

Those who have prepared articles for Te Ara will attest to the fact that they are deceptively difficult to write and illustrate within strict word limits and appropriate levels of understanding. For example, in writing the entry on "Volcanoes" under "Natural Hazards and Disasters", Smith et al. (2006), commissioned to write 3000 words, submitted an article of about 14,500 words together with more than 120 illustrations. The entry was subsequently edited down to about 4,500 words and 55 illustrations.

A search box at the top right of every page searches Te Ara (including images and captions) and the 1966 encyclopaedia (which has been digitised) for information on any topic. Alternatively, readers can browse the encyclopaedia by scrolling through a series of topics, themes, or a comprehensive 'keyword' listing under "Te Ara A-Z". Simon has prepared a 'one-stop-shop' listing of all the geoscience topics now available on Te Ara – see Table 1. Both Simon and David have a version of this table with 'live' links that take you directly to each of the sites simply by holding 'control' and clicking the mouse – please email us if you would like a copy of that file.

References

- Hewitt, A.E. 2007. 'Soils', Te Ara – the Encyclopedia of New Zealand, updated 21-Sep-2007
URL: <http://www.TeAra.govt.nz/TheBush/Landscapes/Soils/en>
- Smith, R.T.; Lowe, D.J.; Wright, I.C. 2006. 'Volcanoes', Te Ara – The Encyclopedia of New Zealand, updated 21-Sep-2007. New Zealand Ministry for Culture and Heritage, Wellington. URL: <http://www.TeAra.govt.nz/EarthSeaAndSky/NaturalHazardsAndDisasters/Volcanoes/en>
- Tonkin, P.J. 2007. 'Soil investigation', Te Ara – the Encyclopedia of New Zealand, updated 21-Sep-2007. URL: <http://www.TeAra.govt.nz/TheBush/UnderstandingTheNaturalWorld/SoilInvestigation/en>

Hydropedology: Concept and Opportunities

Henry Lin

Dept. of Crop and Soil Sci., The Pennsylvania State Univ., University Park, PA 16802, USA.
(henrylin@psu.edu)

Hydropedology has emerged in recent years as an interdisciplinary science that has been recognized by the Soil Science Society of America, International Union of Soil Sciences, American Geophysical Union, and European Geosciences Union. It integrates pedology, hydrology, and geomorphology to study interactive pedologic and hydrologic processes and landscape-soil-hydrology relationships across space and time, aiming to understand pedologic controls on hydrologic processes and properties and hydrologic impacts on soil formation, variability and functions (Lin et al., 2006). It emphasizes *in situ* soils in the landscape, where distinct pedogenic features, environmental variables, and anthropogenic impacts prevail and interact, leading to the first controls on landscape water flux.

Landscape water flux here encompasses the source, storage, availability, flux, pathway, residence time, and spatio-temporal distribution of water (and the transport of chemicals and energy by flowing water) in the variably-saturated soil zone. While source, storage, availability, and flux of water have been studied considerably in the past, attention to pathway, residence time, and spatio-temporal pattern of flow and transport has been limited.

As illustrated in Fig. 1, hydropedology attempts to connect the pedon and landscape paradigms through linking phenomena occurring at the microscopic (e.g., pores and aggregates) to mesoscopic (e.g., pedons and catenas) and macroscopic (e.g., watersheds, regional, and global) scales. Hydropedology, combined with hydrogeology, promotes an integrated systems approach to study the interactions of water with solid earth (soil and rock). In terms of temporal dimension, hydropedology deals with both short- and long-term changes of landscape-soil-hydrology interrelationships. In essence, hydropedology seeks to answer the following are two fundamental questions:

1. *How the structure and distribution of soils over the landscape exert the first control on landscape water flux across spatio-temporal scales in the shallow subsurface?*
2. *How landscape water flux (and associated transport of chemicals and energy by flowing water) impacts soil evolution, variability, and functions?*

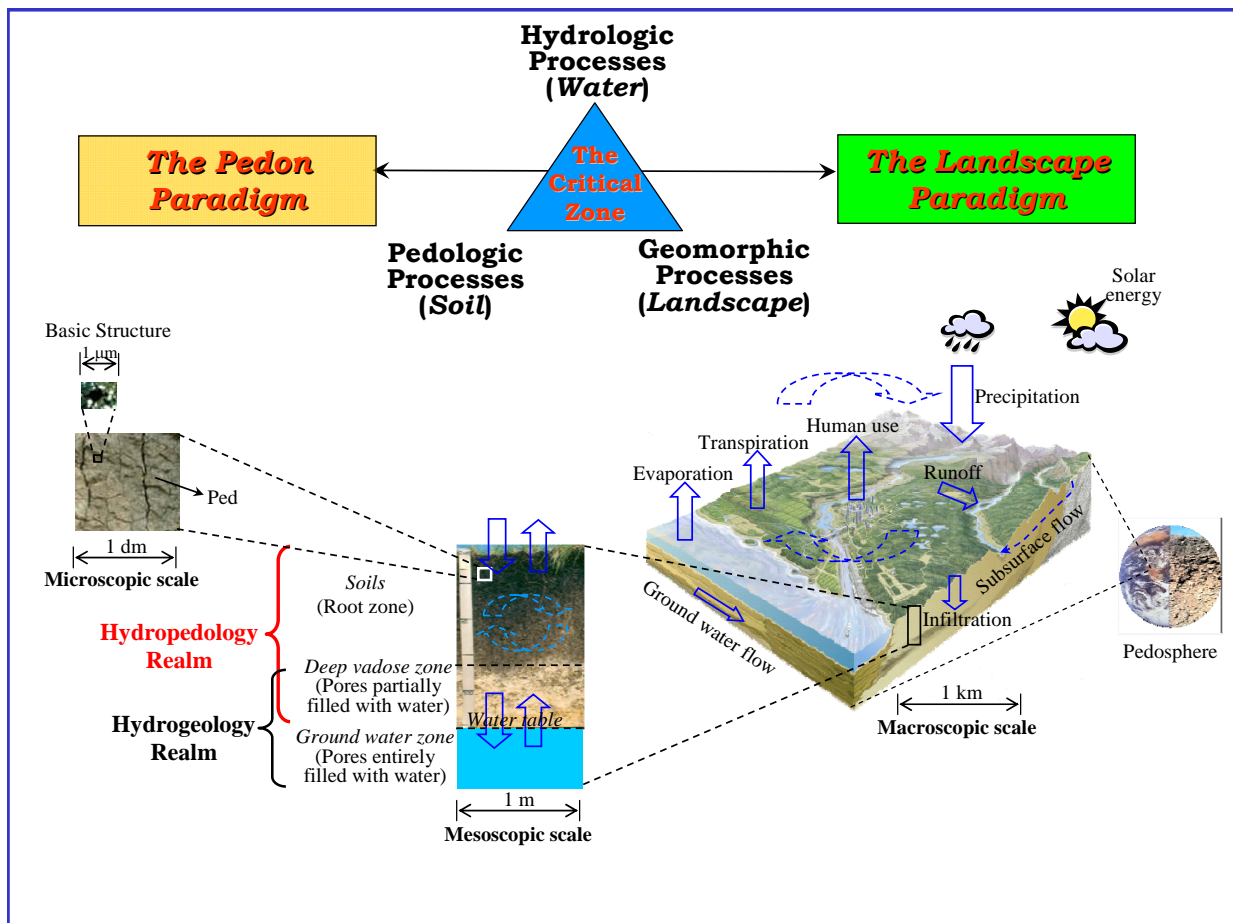


Fig. 1 Hydropedology as an interdisciplinary science that promotes integrated studies of interactive hydrologic, pedologic, and geomorphic processes across spatial and temporal scales.

Some terminologies need a clarification here:

- *Pedology vs. soil science:* "Ped" is a unique term in soil science, and "pedology" captures that uniqueness well. The natural soil "architecture" is the essence of the soil. A crushed sample of soil is as akin to a natural soil profile as a bulk of ground beef is to a living cow (Lin, 2007). Pedology has been regarded by many as the only sub-discipline of soil science that has its own unique theory and in itself is an integrated earth science, while the other sub-disciplines of soil science tend to be applied math, physics, chemistry, and biology to the study of soils.
- *Soil function vs. soil formation:* Classical pedology has focused on soil genesis and classification, whereas hydropedology attempts to focus on quantitative soil functions driven by water and to link the "past" (i.e., soil formation as records of past environment, often at geological time scale) to the "present and future" (i.e., soil functions for the current and future land use, especially at human time scale). Soils are natural integrator of multiple functions in the earth system and space exploration (Lin, 2005), providing a central link in the integrated interdisciplinary study of the "Critical Zone" (from the top of vegetation down to the bottom of aquifer, upon which nearly every life-sustaining resource and all human activities depend).
- *Mr. Water vs. Mrs. Soil:* Water flux into and through soils in the landscape is the essence of life, which resembles in a way blood circulates in a human body (Bouma, 2006). The interactions of soil and water are so intimate and complex that they cannot be studied in a piecemeal manner, but rather as a system across spatial and temporal scales. Hydrology also can aid in quantifying soil-forming processes, since

all natural soil-forming factors (as well as human activities) affect and are affected by hydrology. Water is also key to quantifying soil functions, because once water regime is characterized, soil physical, chemical, and biological functions can be added as they strongly depend on the water regime and on interactive processes with the soil.

- *Hydropedology vs. vadose zone hydrology (or soil hydrology)*: While overlaps exist between these two closely related disciplines, there are clear distinctions between the two: 1) Hydropedology emphasizes *in situ* soils in the context of the landscape, where intact pedogenic features (such as aggregation, structure, and horizonation) and soil-landscape relationships are essential, thus requiring attention to catena, soil mapping, soil morphology, and soil geomorphology; 2) Hydropedology is not just about hydrology, equally important is hydrologic feedback to pedogenesis, soil variability, and soil functions; and 3) Hydropedology deals with variably-saturated zone in the surface and near-surface environments, including unsaturated zone, wetlands, and even subaqueous soils, and encompassing both shallow root zone and deep vadose zone.

Opportunities

There are enormous opportunities for hydropedology to contribute to the advancement of soil science, to open the doors for interdisciplinary collaborations, and to propel for breakthroughs in sustaining the earth's Critical Zone. Highlighted below are some of such examples.

- Hydropedology represents a paradigm shift in our basic thinking and approach to ped, pedon, landscape, watershed, regional, and global scale analysis of soil and water interactions. Besides the challenge of solving Jenny's state-factor equation and the need of developing a soil function theory, other critical hydropedological issues that can stimulate the advancement of soil science include: 1) Quantifying the relationships between soil and hydrologic structures and functions at different scales; 2) Linking the Darcy-Buckingham's law of water flow through soils with the Dokovchiav-Jenny's theory of soil formation and distribution; 3) Developing tools and techniques for *in situ* high resolution and continuous noninvasive mapping of the subsurface flow networks.
- Water is a unifying theme for research on complex environmental systems. Hydrogeoscientists are encountering a new intellectual paradigm that emphasizes connections between the hydrosphere and other components of the earth system. While hydroclimatology, hydrogeology, and ecohydrology are now well recognized, an important missing piece of the puzzle is the interface between the hydrosphere and the pedosphere.
- The integrated study of the earth's Critical Zone has been suggested as one of the most compelling research areas in earth science for the 21st century (NRC, 2001). The emerging Critical Zone science provides a stimulating platform for advancing hydropedology and soil science in general. Example include: 1) Coupling hydropedology and biogeochemistry for ecosystem and weathering studies; 2) Identifying "hot spots" and "hot moments" of biogeochemical processes triggered by soil hydrologic conditions, including biogeochemical reaction rate as limited by transport and pathway in the field; 3) Quantifying variation in soil microbial communities in surface and subsurface soils, and its relation to hydropedology and preferential flow pathways.
- *A global homeland security issue*: Protecting soil and water resources should be considered as a global "homeland security" issue if we are to sustain our home planet and human society, because we (and all ecosystems and wildlife) depend on them every day for food, water, air, energy, and habitat. As Daniel Hillel (1991) succinctly pointed out, "*Our own civilization is now being tested in regard to its management of water as well as soil.*"



- *Environmental regulations for water and soil protection:* Numerous practical applications in our daily life call for expertise in integrated soil and water sciences, such as water quality, land degradation, land use planning, watershed management, wetland protection, nutrient cycling, contaminant fate, waste disposal, precision agriculture, and ecosystem restoration. Examples of emerging regulations include: 1) Sustainable land-use planning and proactive design, including hydrogeology as a foundation for spatial land use planning using a “three-layer” model (Bouma, 2006); 2) Scientifically-sound and socio-economically-feasible trading of water quality, water quantity, and carbon at different scales, including how these trading impacts the physical reality of soil and water resources.

For more information

Please visit hydrogeology web site at www.hydrogeology.psu.edu

The semi-annual *Hydrogeology Newsletter* can also be viewed at www.iuss.org

References

- Bouma, J. 2006. Hydrogeology as a powerful tool for environmental policy research. *Geoderma* 131:275-286.
- Hillel, D. 1991. *Out of the Earth – Civilization and the Life of the Soil*. The Free Press, New York.
- Lin, H.S. 2005. Letter to the Editor on “From the Earth’s Critical Zone to Mars Exploration: Can Soil Science Enter Its Golden Age?” *Soil Science Society of America Journal* 69:1351-1353.
- Lin, H.S. 2007. Cattle vs. ground beef: What is the difference? *Soil Survey Horizons* 48:9-10.
- Lin, H.S., J. Bouma, L. Wilding, J. Richardson, M. Kutilek, and D. Nielsen. 2005. Advances in hydrogeology. *Advances in Agronomy* 85:1-89.
- Lin, H.S., J. Bouma, Y. Pachepsky, A. Western, J. Thompson, M. Th. van Genuchten, H. Vogel, and A. Lilly. 2006. Hydrogeology: Synergistic integration of pedology and hydrology. *Water Resource Research* 42, W05301, doi:10.1029/2005WR004085.
- National Research Council (NRC). 2001. *Basic Research Opportunities in Earth Science*. National Academy Press, Washington, D.C.

Five Questions to a Soil Scientist

Five Questions to Peter Finke

Age: 46
Address: Department of Geology and Soil Science
Krijgslaan 281 9000 Gent
E-mail: peter.finke@ugent.be
Position: associate professor in Pedology (since 2005)



1. When did you decide to study soil science?

This was halfway my study in Physical Geography at the University of Amsterdam, in 1984, when I entered what would now be called the MSc-phase. At that time, there were 6 majors to choose from, and after combining 3 of these for a semester or so (geomorphology, soil science & land evaluation and weathering & soil formation) I chose the one with the longest title while taking minors from each one of the others. With hindsight I wonder if I made a real choice, but anyway I do not regret it at all. The combination of subjects forced me to always keep an open eye for both the landscape, pedon and more detailed scales, and to not forget the user context.

2. Who has been your most influential teacher?

Johan Bouma from Wageningen University (although I never followed one of his courses). He was supervisor of my PhD-study, and he always emitted the right combination of enthusiasm and realism. All though there was no formal teaching, I learned a lot "how to's" from him: writing a manuscript, organizing your own work, functioning in a project environment and keeping an open eye for what's hot and what's not (in soil science). As a good teacher should, he showed how it can be done, gave the opportunity to do it, and provided feedback thereafter.

3. What do you find most exciting about soil science?

The fact that the object of study is always near, readily observable but highly complex. A soil scientist needs to be both a generalist to be able to understand complexity and a specialist to be able to make scientific progress. To be a partly a reductionist and a holist certainly gives a positive tension which I find exiting.

4. How would you stimulate teenagers and young graduates to study soil science?

By asking them when they would or why they don't study it, and using their answers to dress up and fill the early parts of the soil science curriculum. The answer I got from teenagers (grew a few myself), as well as young graduates, was: tell us for what "real world problems" we need it. As many teenagers have their first bit of soil science taught by non-soil scientists, it also very important to stimulate these teachers to tell an interesting story. So the indirect way, e.g. by offering refresher courses to teachers, may be very efficient.

5. How do you see the future of soil science?

On the occasion of the finalization of the soil map of the Netherlands, in 1995, I was asked to comment on the same question. At that time I made the distinction between soil science s.s. and s.l. to sketch likely development pathways. This I would still do today. If we accept that soil science can be cloaked as biogeochemistry, geo-archaeology, quaternary geology, edaphology, physical geography, environmetrics (etcetera), there is a bright future for soil scientists as these disciplines are very much alive. Soil scientists may prosper, but cloaking also reduces visibility, thus appeal for new students, thus the likeliness that above-critical mass groups of soil scientists can be maintained. This is not good for soil science as independent discipline. In the narrow definition, soil science will probably live until the mapping is done, which ending has been postponed thanks to the Commission on Pedometrics but will certainly come. So: it's time for the unclinking of soil science!



5 questions to a Diana Wall

Age: 63
Address: Dept Biology and Natural Resource Ecology Laboratory
Colorado State University
Fort Collins, CO 80523-1499
E-mail: Diana@nrel.colostate.edu
Position: Professor and Senior Research Scientist



1. When did you decide to study soil science?

I actually began studying general microbiology and nematode ecology as an undergraduate and it opened a new world to me. As a graduate student in plant pathology I was fascinated by the activity of microscopic nematode communities and their influence on plants.

2. Who has been your most influential teacher?

I had several who were influential. A high school biology teacher, my college microbiology professor and a college plant pathology professor.

3. What do you find most exciting about soil science?

Soil science is still in the discovery phase ...at the same time we are tasked with how to sustain soils. There is so much happening: new tools and methods to clarify soil invertebrate and microbial biodiversity and its relation to our aboveground world; science that explores sustaining the environment and food and fiber production: integration of multi disciplines such as organism natural history, hydrology, ecology, biodiversity, and ecosystem services into soil science. The science and management of the hidden assets of soil and linked sediment biodiversity as a natural resource is especially exciting.

4. How would you stimulate teenagers and young graduates to study soil science?

There are many excellent examples from other professors that show that field and lab experiments can attract and involve students. My approaches would be those that relate the environment to soil invertebrates. Soil invertebrates are captivating and a critical part of soil science that can be used to unravel many current topics such as: plant-invertebrate interactions and carbon cycling; patterns of belowground and aboveground diversity; biotic responses and feedbacks to climate and land use changes, manipulations and management of soil food webs for sustainable production; determination of vulnerable species and processes in soils in relation to global changes; and relating soil biodiversity to ecosystem services.

5. How do you see the future of soil science?

Those of us who study soils have a formidable challenge and must quickly define priorities to help address complex environmental problems. Soil science must lead by inclusion. The traditional soil science disciplines have broadened and new fields developed that we must embrace. A vision that combines these into an ecosystems approach is fundamental to, and critically needed for developing strategies of future use and management under global changes.

5 Questions to Barbara Wick

Age: 44
Address: Humboldt University Berlin
Department of Soil Science and Site Science
Invalidenstr. 42, 10115 Berlin, Germany
Email: barbara.wick@agrar.hu-berlin.de
Position: lecturer and scientist



1. When did you decide to study soil science?

I became interested in soils during my graduate studies of Biological Sciences at the University of Bremen, Germany. I had an excellent soil ecology course taught by Prof. Weidemann where I learned how soil faunal composition and nutrient cycling are influenced by different soils and landscapes (geestland and marshland). I developed a special interest for soil-plant interrelationships, and soils and their life are since then an important aspect of my scientific portfolio.

2. Who has been your most influential teacher?

Several people contributed at different stages of my career to shape my understanding of science and soils. My most influential teacher during my post-graduate studies of Tropical Agronomy in Göttingen, Germany was Horst Fölster. He was genuine and has provided great inspiration to better understand the variability of soil properties in the landscape. Paul Vlek and Ronald Kühne encouraged me during my Ph.D. work on soil quality and indicators to develop scientific creativity. Holm Tiessen taught me what it means to be a scientist. He learnt me valuable lessons about the need to be innovative in your research and to develop visions; there is always a solution to your problems ("think").

3. What do you find most exciting about soil science?

Soils are one of the most precious and vulnerable natural resources on earth and of humankind. Life on earth and our existence is tightly coupled to the well-being of soils. Soil science is a truly interdisciplinary science, and integrates natural science, socio-economical and policy aspects at local, regional and global scales.

4. How would you stimulate teenagers and young graduates to study soil science?

Generating enthusiasm or curiosity among students takes a lot of commitment and passion. I try to stimulate interest in soils by focusing on interdisciplinarity (see above). I motivate my graduate students by providing opportunities for graduate research. I always encourage them to develop own ideas and visions. I send them to conferences to get exposed to the scientific community and atmosphere. Last but not least respect is what counts.

5. How do you see the future of soil science?

In my view soil science is becoming more and more important of our life; it is no longer seen as Cinderella-science appealing to another type of soil-freak digging dirt. The focus on purely technical issues is now of less importance and the science of soils is more and more being recognized and appreciated as important natural resource that makes up our daily life. Protecting soils from further deterioration by human activities and providing enough food at the same time is one of the greatest challenges we have to solve.



5 questions to a soil scientist

Name: Robert A. (Bob) MacMillan
Age: 57
Address: 7415 118 A Street NW, Edmonton, AB, Canada
E-mail: bobmacm@telusplanet.net
Position: Owner – LandMapper Environmental Solutions Inc.



1. When did you decide to study soil science?

I really didn't decide to study soil science until after I had been given a job as a soil surveyor. I began university enrolled in political science and English with a view to a career in journalism. I was required by university regulations to complete at least one course in science as part of my first year program. I elected to take a course in Earth Sciences that had a large soils component. I felt it would be one of the easier science courses and I had previously taken physical geography in high school and had enjoyed it. At the end of my first year, of university, I decided that I enjoyed science more than humanities and decided to transfer from Arts into Science and to major in geology. I took only one other course in soils from a geography department as part of my 4 year BSc, in geology but it was enough to help me land a summer job with Agriculture Canada, soil survey the spring that I graduated. This summer job led to an offer for a permanent job in soil survey with the understanding that I would register part time in an M.Sc. program in soils while working on soil survey.

2. Who has been your most influential teacher?

I have to say that the most influential teacher I have encountered is the landscape itself. Observing, studying and trying to understand how and why soils arrange themselves in the landscape the way they do has provided me with both my greatest inspiration and my most useful knowledge. In terms of people, I apprenticed as a field soil surveyor and the first two individuals I worked with (Doug Berry and Len Knapik) taught me my most important lessons about soil mapping. These were to enjoy myself while trying to trying to understand complex spatial patterns of processes and forms and to use this understanding to predict where soils would occur in the landscape. They also taught me that it was impossible to achieve perfection in mapping and that one had to do the best one could in the time available and then move on. Dr. Wayne Pettapiece was my Provincial Correlator for the 10 years that I was an active soil surveyor in Alberta and he greatly influenced my approach to mapping and interpreting landscapes. Dr. Ron Eyton introduced me to the use of digital elevation models, GIS and remote sensing at a time (1984-87) when I was searching for better tools to help automate the production of soil maps. Dr. Peter Furley supervised my Ph.D. and helped me to recognize that wisdom and service to others were important personal achievements. Finally, I met Dr. Peter Burrough first in 1986 after only knowing of him through his published papers. Peter was a huge inspiration to me for many years, as I greatly admired his incisive writing, brilliant ideas and ability to apply new technologies to the aging discipline of soil mapping.

3. What do you find most exciting about soil science?

The most exciting aspect of soil science for me is that it is an integrative discipline. It provides a venue for integration and practical application of ideas from geomorphology and geology, hydrology, biology, climatology and pedology. Soil science presents us with a spatial-temporal puzzle that we are challenged to solve. How do the various hydrological, geomorphological and pedological processes interact to result in the mosaic of soils that we discover when we study landscapes? Soils provide a means of interpreting what has occurred in a landscape in the past, what is presently occurring, and what may most likely transpire in the future. I also have enjoyed the fact that it is a field-based discipline that virtually requires one to get outdoors and to physically interact with the landscape, to learn from it and to appreciate it.

4. How would you stimulate teenagers and young graduates to study soil science?

The simple answer is that teenagers and young graduates will study soil science if they can believe that it will help them obtain interesting, relevant and well paying jobs. So, the discipline must make its taught courses relevant to activities where jobs are available. In the developed world, these jobs are mainly associated with studying, monitoring and preserving the environment in response to human activities that disturb it. Soil science needs to become a key component of university programs in ecology, environmental studies, resource management and physical geography. For me, the real appeal of soil science is the opportunity to study the environment in the field in an integrated and holistic fashion. I believe that young students would also be stimulated by studying soils in the field and not just in books and classrooms.

5. How do you see the future of soil science?

I believe that soil science has to adopt more quantitative methods to describe how soils form and where they occur in the landscape. Soil science has to become more like hydrology, which has adopted physically-based, deterministic models to describe, and attempt to predict, the flow of water in the landscape. Secondly, soil science has to become directly involved in addressing the key environmental issues that challenge society. It would be difficult to find an informed adult who had not heard the terms ecosystem or environment and who did not have some appreciation for the need to study and protect ecosystems, and the environment in general. Most will not have heard of pedology, and if they have, would probably have associated it with deviant behaviour against children. Soil science has to break out of its self-imposed segregation in stand-alone university departments of soil science and to become a smaller, but more vibrant and effective contributor to larger, more multi-disciplinary entities that are directly involved in addressing contemporary environmental issues. Soil science needs to be a key component of studies that address the major current issues of global warming, green house gasses, resource development, land degradation, sustainable agriculture and forestry. Soil science needs to undergo a re-definition and resurgence, in much the same way as geography has found new relevance and life through its association with new technologies (e.g. geographic information systems) and contemporary environmental issues (GHG, ozone hole, global warming, bio-diversity).

The favourite soil science books of Peter Leinweber

1. Scheffer & Schachtschabel „Lehrbuch der Bodenkunde“

This is the standard textbook of soil science in German language. It goes back to the year 1937 as part of a textbook in Agricultural Chemistry. The 15th print run appeared in 2002, edited by Schachtschabel, Blume, Brümmer, Hartge, and Schwertmann. Actually a new edition is being written. This is a comprehensive text book which provides me with in-depth information on all aspects in soil science. I consult it for preparation of lectures, but also if I want to get an overview on topics in soil science aside from my every day research work. The references lists at chapter ends are a valuable first approach to which I consult and try to read before doing a web-based literature search. Overall, this is the most useful book for my work in teaching and research.

2. Donald L. Sparks. "Methods of Soil Analysis. Part 3. Chemical Methods (Soil Science Society of America Book Series, No. 5)". Throughout my scientific career it was a challenge to introduce new chemical-analytical methods in the laboratories where I worked. I found the book series "Methods of Soil Analysis" always very useful. Due to my specialisation in soil science more often I used the descriptions of mineralogical and chemical methods than those of biological methods. The periodical revisions and updates make these books a "timeless" instrument in soil research. Introductions and discussions are valuable to get



more information on the subjects and potential and limitations of a certain method. Also I used information from this book for preparation of lectures and laboratory exercises.

3. Les Molloy "The living mantle – Soils in the New Zealand Landscape". I like this book because it shows the beauty of landscapes and soils. In my view it is the best introduction into the soils and the geological basis of pedogenesis on a regional scale. Unfortunately, I have never been to New Zealand, but studying this book it seems to me that the beauty of landscape and the diversity of soils would more than compensate for the long journey. Thus this third of my favourite soil science books was chosen for an emotional reason rather than for its use in every day scientific work.

Obituary Geoff Humphreys

It was with great sadness and regret that soil scientists around the world learnt that Associate Professor Geoff Humphreys of Macquarie University, Sydney, Australia died suddenly on Sunday 12 August 2007. He had been out jogging through bushland near his home when he suffered a heart attack. He was only 54.

Geoff was a highly respected and valued member of the Australian and international soil science community. He was renowned as a committed and tireless researcher and teacher with phenomenal levels of energy and productive output. His passion for understanding processes of soil formation and landscape development was an inspiration to all. Geoff played an active role in the IUSS and the Australian Society of Soil Science (ASSSI), and his passing is a terrible loss to soil science. The tributes to Geoff that have come from friends and colleagues all around the world bear testimony to the high esteem in which he was held.



Geoffrey Steel Humphreys was born in Sydney in 1953, and brought up in that city, being the eldest of five children. The early death of his father when he was only 7 years old thrust responsibility and a leadership role onto Geoff as he helped to care for his younger brothers and sisters, no doubt contributing to his strong authoritative character in later years. As a teenager, Geoff excelled in many sports, particularly rugby where he had a reputation as a skilled and tough hooker. He was an accomplished Queen Scout and a prefect at his high school. During these years Geoff developed a love of hiking and adventure activities; he revelled being outside and exploring the wonders of nature.

Geoff enrolled as an undergraduate at Macquarie University in the early 1970s, studying a combination of earth and biological sciences. He graduated with First Class Honours and was encouraged to move directly onto a PhD. In the following years Geoff pursued his doctorate part time whilst working in the highlands of Papua New Guinea and at the University of PNG, and raising a young family with his wife Janelle. He gained his doctorate in 1985, and soon after took up a position in a multi-disciplinary team in the Land Management Program of the Australian National University. This saw him return to PNG and also to other parts of Asia and the Pacific and even Africa for long field seasons. Geoff was fascinated by the spectacular and highly dynamic landscapes of these countries, which he investigated with boundless enthusiasm. He was also concerned about the extent of erosion and other land degradation that was common throughout these countries.

In 1994, Geoff returned to Macquarie University, teaching and continuing his research into processes of soil formation and landscape evolution. He particularly focused on the role of soil dwelling organisms, producing undeniable evidence of their significance in soil formation. In this work he brought together the disciplines of pedology, geomorphology and ecology, a unique approach and one that led to groundbreaking ideas. His collaboration with colleagues Ron Paton and Peter Mitchell led to the publication in 1995 of *Soils : a new global view*, a book that presented radically new ideas on processes of soil formation. The model they proposed placed a much greater emphasis on biotic and geomorphic processes such as bioturbation and surface wash, and less on the traditionally accepted pedogenic processes such as vertical movement of clay by eluviation. The book received international acclaim and in 1999 the three authors were awarded the GK Gilbert Award for Excellence in Geomorphic Research by the Association of American Geographers. This prestigious award is only given every three years and this was the first time it had gone outside America. In an article titled *Shock the World (and then some)*, Randall Schaetzl included it within the four most groundbreaking and influential treatises on geomorphology and pedology of the 20th Century. Other reviewers put the book at the front of a paradigm shift in the understanding of soil genesis. Receiving the award in America on behalf of the trio must have been one of the proudest moments in Geoff's career. He continued to collaborate with Ron Paton on soil genesis issues right up to his death, with two papers critically evaluating the zonalistic foundations of soil science in the USA having just been published in *Geoderma* (2007, vol. 139).

Geoff recognised the critical importance of detailed quantitative observations of soil morphology at the macro and micro scales. In collaboration with others in Australia and internationally, he sought to unlock secrets of pedology revealed by soil morphological features, generating an impressive publication output along the way. He enthusiastically adopted and promoted new innovative techniques in his studies. He had recently made exciting insights into soil and landscape genesis with Macquarie University associates Marshall Wilkinson, Paul Hesse and others with the use of innovative soil dating techniques involving luminescence dating and cosmogenic radionuclides. Amongst other things, their results suggest that many soils in Australia and perhaps other parts of the world are considerably younger than previously thought. Geoff was instrumental in the establishment of the Soil Morphology and Micromorphology Commission of the IUSS, which he chaired from 2002 to 2006 and was currently 2nd Vice Chair. In this role he is said to have breathed new life into the morphological study of soils. More generally Geoff has been credited with paving the way for a truly modern, interdisciplinary approach to pedology, one that effectively incorporates geomorphological and ecological principles, and this is perhaps the primary legacy of Geoff's career.

In addition to his fine research contributions, Geoff will be remembered as a great teacher and advocate of soil science and scientific research in general. As an Associate Dean of Research at Macquarie University, he was an energetic contributor on several postgraduate and research guiding committees. He was active in ASSSI, and was currently on the organising Committee of the Brisbane 2010 World Congress, as well as with his IUSS responsibilities. For 11 years he was co-editor of the *Australian Geographer*. He was a great communicator, always managing to clearly convey his ideas and inspire others with his enthusiasm. Although he was known to ruffle feathers at times with his strongly held views, this was always done in a spirit of constructive good will.



Geoff was widely admired for his commonsense and wisdom. He was the one that friends and colleagues turned to for sage advice, being described as “the tribal elder” of his Department (even though he wasn’t that old!). Although initially he could appear almost intimidating, especially with his tough gravelly voice, his great warmth of character and good humour quickly became evident. Seeing Geoff enjoying a good belly laugh over a beer was a common sight on field trips. His description as an “affable old bear” was very apt. An essentially modest man, Geoff rarely referred to his own achievements, always preferring to sing the praises of others, particularly his students.

The sudden passing of Geoff has left those who knew and worked with him deeply saddened. His warm friendship, illuminating discussions and leadership will be sorely missed. But his important contributions to soil science will ensure his name lives on for many a year. The world soil science community has lost a valuable member.

Jonathan Gray and others
Macquarie University, Sydney

Reports of Meetings

Pedometrics 2007

From August 27 to 30 Eberhard Karls Universität, Tübingen, Germany played host to the biennial Pedometrics conference. Following previous events at Ghent, Reading and Florida, the 2007 conference covered many topics such as digital soil mapping, proximal soil sensing and geostatistics. The conference hosted approximately 100 attendees from various occupations such as soil scientists, surveyors, geographers, environmental scientists, mathematicians and statisticians.

The conference was preceded by a workshop run by Gerard Heuvelink and James Brown which saw approximately 20 attendees cover many aspects of the theory and application of Spatial Uncertainty Propagation. The workshop also provided an excellent means for networking, particular as many in attendance were students on their maiden pedometrics conference.

Alex McBratney's keynote presentation “Developing Pedometrics: a history and geography of ideas” on Monday morning got things underway, followed by sessions on digital soil mapping, soil sampling and geostatistics. Upon completion of the day’s oral presentations, a revamped poster presentation session was held where authors were allowed 3 minutes to summarise their work. Overall, the new format was successful in bringing greater focus to the posters albeit with the occasional ‘time penalty’. After a full first day, some opted for the guided tour of the historic town whilst others settled down in the ‘old town’ for a couple of local *hefeweizen*.

Pedometrics chair, Murray Lark provided some food-for-thought on day 2 with his keynote, “On not data mining in Pedometrics” with oral presentation sessions on digital soil mapping, uncertainty and soil sensing completing the day. The Tuesday night saw attendees head to the Casino am Neckar alongside the Neckar River for the conference dinner. The pedometrics best paper awards for years 2005 (Savelieva, E., V. Demyanov, M. Kanevski, M. Serre, G. Christakos. BME-based uncertainty assessment of the Chernobyl fallout. *Geoderma*, 128 (2005): 312-324) and 2006 (Heuvelink G.B.M., Schoorl J.M., Veldkamp A., Pennock D.J. Space-time Kalman filtering of soil edistribution. *Geoderma* 133 (2006):124-137.) were awarded along with Gerard Heuvelink being named winner of the conference pedometrics quiz.

The conference reconvened for the final day, starting with Dick Brus’ keynote “Sampling for soil survey and Monitoring. Examples from the Netherlands” with fuzzy logic and mixed topic sessions completing the oral presentations.



A brown soil soil derived from basaltic tuff on display in the field (Wilma, open the door!)

Following the completion of the conference proper, a field trip of the Baden-Württemberg region was run by conference organisers Thorsten Behrens and Thomas Scholten. The day gave resident soil scientists a chance to get their hands dirty with the trip including numerous soil pits representing some of the more important and interesting soilscapes of the region. The day was completed with a tour of a local cooperative winery and some product testing.

After my first pedometrics conference, I was thoroughly impressed by the comradery of attendees at a professional and social level. Of particular note, question time following oral presentations highlighted the healthy competitiveness amongst the pedometrics fraternity. The keynote speakers are to be congratulated for preparing engaging and interesting talks that applied to all in attendance. Of particular note, I found Murray Larks presentation stimulating in challenging our approach to simulation and modelling.

The resounding success of the conference was due to the organisation of Thorsten Behrens and Thomas Scholten and on behalf of all in attendance I'd like to extend my thanks.

Grant Tranter
The University of Sydney
g.tranter@usyd.edu.au

Paleopedology activities at the INQUA congress in Australia 2007

The Paleopedology commission participated in the XVII INQUA Congress held at Cairns, Australia, 28 July – 3 August 2007.

The commission collaborated in the preparation of three oral and as many poster sessions:

1. "Pedogenic Analysis of Aeolian Deposits", Convenors: Martin Iriondo and Birgit Terhorst.
2. "Pedogenic carbonate as palaeoenvironmental proxy", Convenors: Konstantin Pustovoytov and Marie-Agnes Courty
3. "Timescales of soil formation", Convenors: Daniela Sauer and Edoardo Costantini



All sessions had a wide participation and a good attendance. Several papers related to Paleopedology were also presented in three other sessions: "Aeolian dust and environmental change", "Quaternary circum alpine stratigraphy", and "Dynamics of terrestrial systems: geology, biogeochemistry, climate". All abstracts of the Congress have been published in a special edition of Quaternary International (volume 167-168 Supplement) and are available on line.

Business meeting

The Paleopedology business meeting was held on the 30th of July.

Attendees:

Greg Botha, Marie-Agnes Courty, Geoff Humphreys, Martin Iriondo, Ju Yong Kim, Alexander Makeev, Ahmet Mermut, Konstantin Pustovoytov, Paul Sanborn, Daniela Sauer, Birgit Terhorst, Christoph Zielhofer

Missions of the Paleopedology Commission

The president, Edoardo Costantini, underlined the missions of the Paleopedology Commission, which are:

Coordination: Promoting events, avoiding overlapping, supporting interdisciplinary meetings, keeping relationships between Soil Sciences and Earth Sciences

Dissemination: Proceedings of the meetings, newsletter, mailing list, web site.

Commission overview. The Paleopedology Commission was formed at the 1965 INQUA Congress, and since 1968 has been affiliated to the Soil Genesis, Classification and Cartography Commission of the International Society of Soil Science (ISSS) and since 1990 to the Stratigraphy Commission of the International Union of Geological Sciences. These links reflect the increasingly multidisciplinary activity of the Commission's work in relation to the genesis and Quaternary history of non-buried soils and the recognition and interpretation of pre-Quaternary paleosols. Unfortunately, during the XVII INQUA Congress in Reno it was decided to delete Paleopedology Commission and to include it as a sub-commission with INQUA Commission on terrestrial processes (TERPRO). In 2006 Paleopedology working group was transformed into Paleopedology Commission during the XVIII IUSS Congress in Philadelphia. Through its history, the Commission unites more than 350 corresponding members spread among these three international unions. Some attend the Congresses of all three, which leaves only one year in four available for major Inter-Congress symposia of the Commission. However, many also attend Inter-Congress meetings organized jointly with other INQUA or ISSS Commissions.

The main activities of the Paleopedology Commission of INQUA falls into the following categories:

Meetings. Since 1965 the Commission organized 8 international meetings and field workshops on paleopedology. Besides, the Commission is actively participating in IUSS and INQUA international congresses, conducting 2-4 thematic Symposia during these events. Some Symposia are organized together with INQUA Loess and Tephrochronology commissions, ensuring interdisciplinary activities. The Commission is also organizing paleopedology sessions during Eurosoil and European Geosciences Union (EGU) Congresses and meetings of soil micromorphology and geoarchaeology groups.

Newsletters. The Commission have produced 20 issues of the Paleopedology Newsletter, being distributed among Commission members, since 2003 in electronic format.

Publications. Papers, presented at paleopedology meetings have been published in international scientific journals, such as thematic issues of Quaternary International, Geoderma, Catena and others.

Internet. Since 1995 the Commission is maintaining its web site, that include all the information about Commission activities: Forthcoming meetings and past meetings reports, an archive of paleopedology newsletters, announcements, web forum and mailing list, member database, related links.

INQUA projects. Since 1995, when INQUA Counsel decided to support project-based activities the Commission is trying to apply for INQUA projects. So far, three applications

were successful. INQUA also supported a project of Paleopedology Commission, funded by ECSU.

The main result of Commission activities is that it is capable to keep together a group of more than 350 hundred inter-disciplinary scientists and to provide orientation for young scholars in the field of paleopedology. It is quite obvious, that Commission activities are by far much wider than project-based or focus areas activities.

The president also summarized the main activities carried out by the Paleopedology group in the last four years, since the last INQUA conference of Reno, in 2003. INQUA, Reno, 2003:

- the proceedings of the symposia on Paleopedology held in the past INQUA conference of Reno, 2003 have been published in the special volume of Quaternary International 162-163, editors Carolyn Olson, Bruce Harrison;
- the VII international symposium & field workshop on paleopedology "Paleosols: memory of ancient landscapes and living bodies of present ecosystems" was held in Florence, Italy, 7-11 June 2004, the proceedings were published in a special volume of Quaternary International 156-157, editors Peter Jacobs, Edoardo Costantini;
- Paleopedology sessions were organized in the conference "Global Soil Change", Mexico city, 2005, and the proceedings were published on
 - "Revista Mexicana de Geologia", v. 24, 2, 2007, editors Christina Siebe and Daniel Richter
 - "Catena" (in press), editors Elisabeth Solleiro, Daniel Richter,
- At the 18th World Congress of Soil Science held in Philadelphia, between 9th to 15th of July 2006, two oral sessions, two poster sessions and a theatre session were specifically dedicated to Paleopedology. The themes were: "Imprint of paleoenvironmental change on paleosols", and "Amazonian dark earth soils (Terra Preta and Terra Preta Nova)", which was a tribute to Wim Sombroek, The contribute of paleopedology was also important for other some sessions, namely: "Arid soils: genesis, geomorphology and geoarcheology", "Soils on limestone: their properties, genesis and role in the human societies", "Soil system behaviour in time" and "Interdependency of soils and soilscapes". The proceedings are in preparation, to be published on "Journal of Soil Science and Plant Nutrition", editor Reinhold Jahn.

Proceedings of the INQUA 2007 Conference

The assembly discussed and approved the idea of collecting all contributions related to Paleopedology presented in the different sessions of INQUA 2007 in a thematic volume of Quaternary International. Geoff Humphreys and Edoardo Costantini agreed to be editors, with the option that other editors could be added. All session conveners will be included in the conception of the volume, which shall report the advances of the different branches of Paleopedology.

Upcoming meetings

The next meeting will be held in Chennai (Madras), India, from 10 January to 14 January 2008. It will be organized by Dr. Hema Achyuthan, Department of Geology, Anna University, Chennai. The title of the International Conference and Field Workshop on Paleopedology in Chennai is: Paleosols, geomorphic evolution of landscape and Paleoclimate change. Further information are available on the web at: www.int-paleopedologyconf-2008.com

The next Eurosoil congress will be held in 2008 in Vienna. Sessions related to paleopedology will be:

S2 Soils and Climate Change, convenors: Natasa Vidic and Viliam Pichler

S25 Memory Function of Recent and Paleosols, convenors: György and Adrijan Kosir

S29 Time scales of pedogenic processes for predicting soil changes in time, convenors: Victor Targulian and Attila Barczi

S30 Micromorphological and mineralogical features (evidence) of soil environmental change, convenors: Karl Stahr and Maria Gerassimova

In the year 2009 the members of the group will meet in the USA, possibly in Nebraska. The main organizer will be Peter Jacobs, University of Whitewater, Wisconsin. In the year



2010 there will be the congress of the IUSS at Brisbane, Australia. The society has urged the Commission to provide themes for the possible sessions. The proposals are the following:

1. Impact of aeolian sediments on pedogenic processes and soil morphology

This session proposes to investigate how additions of even modest increments of aeolian sediment (such as loess or volcanic ash) to underlying sediments or existing soils has influenced the pedogenic processes that shaped the morphology and characteristics of the modern soil cover or changed the existing soil beneath. For example, relative to underlying glacial sediments most fine-grained aeolian sediments have low bulk density, weatherable minerals and/or high-charge clays, and readily dispersible clays. Aeolian sediments can thus influence soil ecosystem properties such as moisture holding capacity, rooting depth, and carbon storage, and can provide clay or soluble salts for migration to subsoil horizons, all of which impact soil morphological expression.

2. Genesis and functions of soils and paleosols in karst environments

Soils of karstic landscapes, being contrastingly different from the "central images" of zonal soil formation, are a product of interaction of in situ pedogenesis, karst erosion and addition of allochthonous silicate materials. This interaction can result in formation of diverse soil bodies - from thick red soils with high productivity to shallow Leptosols with rock outcrops, not suitable for agricultural use. We invite contributions dealing with the factors and mechanisms controlling the realization of different models of karstic soil development under different sets of environmental conditions.

Soil cover of karst landscapes produce specific reactions on environmental change, contemporary and past, natural and anthropogenic, and develops specific paleosol and pedosediment records, related to surface and subsurface karst geofoms. Papers dealing with relict soil bodies and features in karstic landscapes, including their correlation with other karstic records (speleothems) and existing datasets on regional and global environmental change, are welcome.

This will be a joint session of the commissions "Soil Genesis" and "Paleopedology".

3. Timescales of pedogenic processes

Identification of the nature of pedogenic processes and quantification of their rates may enable us to estimate the age of land surfaces and - in combination with other proxies - to reconstruct landscape history. Examples are the distinction of marine or fluvial terraces and the establishment of chronologies of sand dune formation or glacier retreats, based on different degrees of soil development. The knowledge about how much time is required to form a certain soil in a certain environment is also essential for deciphering correctly the landscape and climate history written in paleosols and paleosol/loess- or paleosol/ash-sequences. An estimation of the timespan required for formation of a certain soil in a specific environment is also needed to evaluate the tolerable soil erosion rate for an environment. For these reasons, it is important to work continuously on increasing our understanding of pedogenic processes, their rates, and the ways in which they are influenced by soil forming factors.

The chair of Division 1, Prof. Ahmet Mermut, points out that each commission may have two sessions plus (intercommissional and interdivisional) joint sessions on the IUSS congress 2010.

Officer nominations

The IUSS urged the commission to nominate candidates for the next term officer positions. The Commission decided to provide the names of Daniela Sauer and Sergey Sedov for the positions of president and vice president. Other nominations from the National societies and single IUSS members are possible.

Handbook of Pedology

Prof. Ahmet Mermut presented his initiative about the Handbook of Pedology, which will illustrate the state of the art regarding all the themes of interest of the first Division, "Soil in space and time", chaired by Prof. Mermut. The Paleopedology group supports the initiative and is in the process of elaborating a series of paragraphs dealing with the different branches of Paleopedology, in particular:

- Dating of Paleosols
- Methods of field and laboratory study
- Paleosols and Archaeology
- Paleoseismic activity and Paleopedology
- Pedostratigraphy and mapping
- Rates of soil forming processes
- Paleosols and Geomorphology
- Loess-paleosol-sequences in northern America
- Loess-paleosol-sequences in Europe
- Loess-paleosol-sequences in Asia
- Loess-paleosol-sequences in the southern hemisphere

Prof. Mermut expressed his wish to collect personally the different contributions and asked the president of the Paleopedology Commission to send him the email addresses of the people who manifested their interest and availability in being the reference authors of the above mentioned paragraphs.

Future projects

The assembly discussed the possibilities offered by the EU 7FP, COST action, as well as INQUA to apply for projects to coordinate and enhance collaboration among the members of the group. Edoardo Costantini, Alexander Makeev, Konstantin Pustovoytov and Daniela Sauer will prepare a first draft for a COST action. Deadline of submission of a preliminary proposal is the 30th September 2007. The topic, suggested by Geoff Humphreys and accepted by the assembly, is related to soil changes in changing climate.

Meeting of the Terrestrial Processes Commission

On the 1st of August, the Terrestrial Processes of INQUA had its meeting. During the meeting, it was communicated to the attendance that the structure of the TERPRO Commission has been reformulated, closing all subcommissions and creating focus areas, which correspond to the working groups financed by INQUA. The president of the TERPRO Commission solicited all members to submit project proposals for the next 2007-2011 term. As no projects related to Paleopedology were financed by INQUA, no focus areas on Paleopedology were foreseen. The same was true for the Loess subcommission, among others.

The members of the Paleopedology subcommission who were present at INQUA meeting, as well as others paleopedologists involved in the activities of INQUA who were contacted afterwards, decided to communicate to the president of the TERPRO Commission that they are in favor of the maintenance of the Paleopedology subcommission. In their opinion, the disciplinary activities can not be reduced to the projects supported by INQUA. In addition, the maintenance of the subcommission will help the prosecutions of the research about Paleopedology inside Quaternary Sciences as well as the collaboration with Soil Sciences.

INQUA Post Conference Fieldtrip

Three members of the Paleopedology commission, Edoardo Costantini, Paul Sanburn and Daniela Sauer, took part in a post conference field trip led by the new INQUA president Allan Chivas. The journey from Adelaide to Alice Springs passed from well-watered areas in the South through semi-arid and arid zones receiving little more than 100 mm MAP. In the South, we visited calcretes formed on norite (gabbro) and granite, which is possible due to marine aerosols being the Ca source for calcrete development. The trip then went on along the Flinders Range to the North. On day 3, we visited a remarkable exposure of wetland deposits in Brachina Gorge, including a well developed paleosol (Calcic Stagnic Vertisol). The Ochre Cliffs N of Lyndhurst, an exposure of saprolite of various colors, is used by Aboriginal people for obtaining colors for painting. W of Marree we visited a Gypsisol and

our first "gibber plain". Gibber plains are eroded surfaces covered by gravel of silcrete and ferricrete fragments, which were widespread along our further way. Other highlights of the tour included breakaways, a view on Lake Eyre South, mound springs of the Great Artesian Basin, sand dunes. In Coober Pedy, we stayed overnight in an underground hotel with the walls of our rooms consisting of saprolite. Other main attractions were Uluru (Ayers Rock) and Kata Tjuta (The Olgas). During the seven days of the excursion we saw a lot of the great and impressive landscape of Southern and Central Australia and learned much about landscape history, geological, hydrological, geomorphological and pedogenic processes in this very special, old landscape.

Daniela Sauer and Edoardo A.C. Costantini

28th to 30th May 2007, Lleida (Spain)

The 15th N Workshop www.nitrogen15workshop.udl.es/nitrogen/html/introduction.html organised by the RUENA (Spanish Network for the Efficient Use of Nitrogen in Agriculture) and the Department of Environment and Soil Sciences of the University of Lleida (DMACS-UdL), as well as by the Fundació Universitat de Lleida (logistics) was held in Lleida (Catalonia, Spain) from the 28th to the 30th May 2007. The participants (210 people, see picture) came from UK, The Netherlands, Italy, France, Belgium, Germany, Switzerland, Greece, Canada, USA, Norway, Latvia, Poland, Portugal, Tunisia, Japan, Australia, and New Zealand among others.



Most of the participants in the 15th N Workshop, Lleida (Spain).

This has been the 15th edition of the nitrogen workshops and the 25th year of its celebration. This was, therefore, the ¼ of century of nitrogen workshops anniversary. On this occasion homage was rendered to Dr. Scholefield (IGER, UK) because of having fostered the N workshops through these 25 years and having attended all of them as well as because of his "retirement" in the near future.

The workshop started with an opening session on "Nitrogen research evolution through N workshops" by Dr. J.J. Neeteson. There were other two plenary invited speeches on "Approaches to N management in order to improve N-use efficiency" by Dr. G. Lemaire, "N flows in agricultural systems, grassland and forest systems" by Dr. Claudio O. Stockle, and several other plenary oral presentations on the "Approaches to N management in order to improve N use efficiency", the "N flow in agricultural systems, grassland and forest systems" and on the "External constraints for nitrogen fertilization".

Three very interesting parallel technical field trips took place to dryland, irrigated and mixed agricultural systems respectively. The field experiments being performed by the local team of researchers were shown and discussed. These trips also included other visits to introduce into the main characteristics of the Ebro valley agricultural systems to the

participants. The working groups were also successful, mainly because the convenors did a very good job, before and during the workshop. The 16th N Workshop will be held in Italy. See you there!

**Note on the Pre-conference Meeting at Chengdu
27th May-2nd June 2007**

Following the acceptance in 2004 of China as the host for the next international meeting on soil micromorphology (the 13th) Professor Xiubin He approached executive officers in Commission 1.1 Soil Morphology and Micromorphology about a pre-conference meeting to assist in advancing the organization for this conference. This note records the meeting that took place.

The objective of the pre-conference meeting was to discuss the progress in planning of the conference and associated field trips as well as determine the scientific content and organisational structure. The Conference will be sponsored by the Institute of Mountain Research, Chinese Academy of Sciences and National Natural Science Foundation of China. The location of the conference in China, the first time in the Far East, is especially important since one fifth of the IUSS members are Chinese. Moreover, it will attract the participation of neighbouring countries with a long tradition of soil micromorphological studies.

Two trips were undertaken: a paddy soil and archaeology at Sanxingdui with its splendid museum, and the ancient flood mitigation works at Dujiangyan, and the 'purple soil' country. The latter involved a 3 day >1500km roundtrip from Chengdu to Nanchong, Zhongxian (overnight), Shibaozhai, Chongqing (overnight) and Chengdu with visits to various cultural features (Xishan Park, Shibaozhai temple, Three Gorges Museum) and some stops to examine soils and landuse.

The field trips and business meetings were well organised by Prof. Xiubin He, Dr. Hongyi Zhou, Dr. Donhong Xiong, Prof. Yurong He, Ass. Prof. Yangchun Wang and Dr. Yibei Xu (IMHE).

As a result, the web page of the conference (www.imde.ac.cn) was updated and now includes the list of sessions, a call for abstracts and details on conference field trips. The overall outcome of this meeting ensures a successful conference in Sept. 2008.



Left to right: Yanchun Wang, Xiubin He, Geoff Humphreys, Ahmet Mermut, Rosa M Poch, Donhong Xiong.



Tenth International Symposium on Soil and Plant Analysis, Budapest, Hungary

The International Symposium on Soil and Plant Analysis (ISSPA) is the premier gathering and showcase event in soil and plant analysis. It is sponsored by the Soil and Plant Analysis Council, Inc. (SPAC), an international society of scientists and organizations interested in advancing nutrient analysis of soil, plant, and water. About 130 scientists from 28 countries participated in the 10th ISSPA held in Budapest, Hungary, June 11-15, 2007. It was hosted by the Hungarian Academy of Sciences and the Research Institute for Soil Science and Agricultural Chemistry, Budapest. It continued a successful series of symposia held since 1989. The purpose of the biennial Symposium was to bring together agricultural and natural resource scientists from around the globe to share information on soil, plant, and water analyses for the purpose of efficient resource management and environmental protection. The venue of the Symposium was Hotel Mercure Buda. The hotel is located in the business district of Buda, across the street from a large park and faces the city's Castle District, a UNESCO World Heritage Site.

The 192-page Program and Abstracts book (edited by Tamás Németh and Sándor Koós) was given to all the delegates at the time of registration. The symposium was officially opened by Donald Horneck, SPAC President. Szilveszter E. Vizi (President of the Hungarian Academy of Sciences) and Sándor Magda (Rector of Károly Róbert College and Member of the Hungarian Parliament) welcomed the participants to Budapest. Tamás Németh, Chair of the Local Organizing Committee, welcomed the delegates to the Symposium.

The theme of the symposium was "Role of soil, plant, and water analysis in multifunctional agriculture and sustainability". A number of highly regarded keynote speakers presented papers in the following seven plenary sessions: Present status and future trends in crop production; Organic matter and soil fertility; Degradation processes influencing soil fertility; Soil mapping and sampling; Modeling soil chemical phenomena; Modeling nutrient management; and Fertilization status in the Eastern European countries. Poster papers were an integral component of the Symposium. The voluntary papers were presented in the following seven poster sessions: Chemical methods for soil-plant relations; Heavy metals and remediation processes; Greenhouse and field methods in soil fertility and plant nutrition; New products for improving the soil fertility; Basic tools for environmental friendly plant nutrient application; Nutrient cycles in the soil-plant system, and Precision farming, present and future. Each poster session was coordinated by a scientist who gave, to whet the appetite, an overall picture of posters being presented in that session. I am grateful to the Organizing Committee for giving me the opportunity to coordinate Poster Session 3 (Greenhouse and field methods in soil fertility and plant nutrition) on June 12. A new feature of this Symposium was the oral component of the poster sessions. In the time slots scheduled for posters, presenters gave a five-minute overview of their posters. The oral and poster papers will be published, after scientific reviews, in the Proceedings as a special issue of the Communications in Soil Science and Plant Analysis (Guest editor: Arri van Vuuren).

The Welcome Reception on June 11 was a unique opportunity to renew old friendships and make new ones. The Symposium Dinner on June 14 on the Ship Millennium I, while cruising the magnificent Danube river, was a unique experience. The Budapest panorama at sunset and during the night was spectacular. Following the dinner, Donald Horneck presented the prestigious J. Benton Jones, Jr. Award to John Ryan, a world renowned soil scientist from the International Center for Agricultural Research in the Dry Areas, Aleppo, Syria, for his significant contributions to the development and advancement of soil and plant analysis. The recipients of the J. Benton Jones, Jr. Award at the previous nine symposia were J. Benton Jones, Jr., USA (1989), Victor J.G. Houba, the Netherlands (1991), Yash P. Kalra, Canada (1993), Nat Dellavalle, USA (1995), Wayne Sabbe, USA (1997), Umesh C. Gupta, Canada (1999), Theodore R. Peck, USA (2001), George E. Rayment, Australia (2003), and Malcolm Sumner, USA (2005).

I was one of the 10 people who took the Pre-Symposium Tour on June 8-10. The tour started at 9:00 a.m. on June 8 from Hotel Mercure Buda. We traveled to Debrecen where

we had lunch at the Hotel Villa Debrecen. János Antal was our tour guide for local sightseeing. Debrecen (nickname the Calvinist Rome) is the second most populous city in Hungary. We visited the beautiful campus of the University of Debrecen. The stay at the Thermal Hotel Victoria was excellent. Relaxation in thermal baths (inside and outside the hotel) was an invigorating experience. Next day we visited the National Park Hortobágy within the Hungarian "Puszta" (Great Hungarian Plain), steppe, famous for its wildlife and traditional agriculture (a vast area of plains and wetlands in eastern Hungary; the largest continuous natural grassland in Europe). Hortobágy was designated as a national park in 1973 (the first national park in Hungary). We saw the Mátá Stud Farm, Horse Breeding Centre. We took a tour on the horse-drawn carriage into the puszta visiting famous Hungarian rare breeds, e.g., grey cattle, Nonius horses, water buffaloes, Racka sheep and the Mangalica pigs. Then we were off to Tokaj. Tokaj-Hegyalia is renowned for its vineyards and wine cellars throughout the world. We tasted the world-famous Tokaji aszú titled "The King of Wines, Wine of Kings". The view from the top of the 514 m Tokaj Mountain (Kopasz/bald Mountain) was spectacular. After dinner at the Hotel Magita, we visited the famous Vivamus winery (3.5 km underground cellar; 200,000 (0.75-liter) bottles plus 24,000 (136-liter) barrels of wine. On the third day of the tour, after sightseeing in Lillafüred (a popular tourist resort), we took a short excursion to Garadna by forestry railway (760 mm narrow gauge). After lunch, we came back to Lillafüred and then to Budapest.

The Mid-Symposium Tour on June 13 was an excursion around the northern lakeside of the Lake Balaton, the largest freshwater lake in Central Europe. The itinerary included Budapest-Velence-Tihany-Balatonfüred-Tihany-Szántód-Budapest. We saw fields of canola, corn, wheat, and sunflowers. I was impressed by the Analytical Laboratory at the Plant Protection and Soil Conservation Directorate of the Agricultural Office of County Fejér, Velence.

This is the first time that ISSPA was held in Hungary, the gateway to Eastern Europe. Budapest, Hungary's Capital, "The Pearl of the Danube", is on UNESCO's World Heritage list. The River Danube divides the metropolis of some two million people into two, the hilly Buda and the flat Pest. I found Budapest one of the most beautiful capital cities in the world.

The Symposium Organizing Committee included Tamás Németh, Sándor Koós, Katalin Sárdi, Péter Csathó, Zoltán Gyori, János Nagy, Márton Jolánkai, Lajos Szabó, and Zoltán Izsáki (Hungary), George E. Rayment (Australia), Georges Hofman (Belgium), Yash P. Kalra (Canada), Jorge Etchevers (Mexico), Roger Hill (New Zealand), Andries Claassens and Arri van Vuuren (South Africa), John Ryan (Syria), and Donald Horneck, Mark Flock, Byron Vaughan, Neil Christensen, Bob Beck, and Bob Deustch (USA). I congratulate Tamás Németh and his committee on the excellent arrangements. The legendary Hungarian hospitality was remarkable.

The previous nine symposia were held in Fresno, California, USA (1989), Orlando, Florida, USA (1991), Olympia, Washington, USA (1993), Wageningen, the Netherlands (1995), Bloomington, Minnesota, USA (1997), Brisbane, Queensland, Australia (1999), Edmonton, Alberta, Canada (2001), Somerset West, Western Cape, South Africa (2003), and Cancun, Mexico (2005). I have the privilege and distinction of being the only scientist in the world to have participated in all the 10 symposia.

The symposium is now held alternately in North America and overseas. The 11th ISSPA will be held in Santa Rosa, California, USA in 2009. Further information will be posted on our web site (www.spcouncil.com). If there is one international meeting that you can go to in 2009, this is the one.

Yash P. Kalra
Canadian Forest Service
Edmonton, Alberta, Canada
Email: ykalra@nrcan.gc.ca



International Summer School

An International Summer School FSGC that was held to Campobasso (South of Italy) from 10 to September 22, 2007. The summer school was financed by Italian University Minister (MUR) and it involves five universities partners: Molise, Torino, Palermo, Cordoba and Santiago de Compostela. The summer school had a objective to illustrate new knowledge in the topic of forest soil and the forest resources, addressed to young researchers toward thematic more close to the territory and soil science research. To the summer school participate 19 students of which 13 coming from and 6 from the foreign countries and also 16 national and international experts. Particularly the background of teachers were form soil science, soil biology, forest ecosystems, remote sensing, atmospheric processes. Other expert that participate in the project come from Florence University, National University in Moscow, University in Naples, University in Padua, Purdue University of USA, University of Tuscia, IREA-CNR Milano, IBAF-CNR Porano, WSL Birmensdorf, Society Italian of Pedology (SIPe) and Italian Soil Science (SISS). Many studies of the soil science are excessively limited often by a sectorial approach that can be reduce their impact, in the summer school an interdisciplinary approach proposes an advanced methodologies on soil science. Some lecture in the summer school considered a forest soil as an essential factor for the protection of the global equilibrium of the biosphere for the production of biomass, for the regulation of cycle environmental components (for instance the underground waters, etc.) as substratum of the most greater part of the biological activities understood ivi the human activities, and also as container of information.



Prof. Claudio Massimo Colombo
Dipartimento di Scienze Animali, Vegetali e dell'Ambiente
Via De Sanctis s/n 86100 Campobasso Italy
phone: +39 0874 404654
fax: +39 0874 404678
mobile phone: 3471776231
e-mail: colombo@unimol.it

Annual Meeting of the AOAC INTERNATIONAL PNW, Tacoma, USA

The 27th Annual Meeting of the AOAC INTERNATIONAL Pacific Northwest Section was held at the University of Puget Sound (UPS) in Tacoma, Washington, USA on June 20-21, 2007 under the leadership of Carlos Abeyta, Jr. of the Food and Drug Administration, Bothell, Washington. Founded in 1888, UPS is a national liberal arts and sciences college. It is

located in the charming residential area in historic North Tacoma. Its beautiful campus, ivy-wrapped brick buildings, spacious lawns, and elegant fountains provide an ideal setting for such events. We have held our Annual Meetings here since 1998. In the past, the meetings were held on Thursday and Friday. This year the new feature was that the meeting was held on Wednesday and Thursday. The diverse program was of interest to analytical communities, regulators, researchers, and industry members. The theme of the meeting was "*The Use of Biotechnology/Diagnostic Kits in the Laboratory and Epidemiological Investigations*". In addition to the keynote addresses, papers were presented in the following seminars: Soil and Environmental Chemistry, Pesticide Residues, QA issues for the Chemistry Laboratory, Diagnostic Kits, Microbiology, and Amino Acid Analysis. The Soil and Environmental Chemistry seminars, that I coordinated, included following presentations: Pipetting, Ergonomics, and You (Richard Altomare, Rainin Instrument, Woburn, MA), Useful QC Tools for the Soil Lab (Ed Paski, Analytical Innovations, North Vancouver, BC), Novel Focused Semi-Open Microwave Instrument for Organic Solvent Extraction Studies (Bob Lockerman and Michael Howe, CEM Corporation, Matthews, NC), Arsenic Speciation: Made Simple and Easy for the Common Laboratory (Marshall Pattee, Elemental Consulting, North Plains, OR), and Challenges and Opportunities in Soil and Plant Analysis (Yash P. Kalra, Canadian Forest Service, Edmonton, AB).

The following companies participated in the Vendor Expo (an exhibition of scientific equipment, supplies and services) on June 20: Agilent Technologies, Applied Biosystems, Cetac Technologies, Dionex, Extech, Fisher Scientific, Hitachi High Tech, J2 Scientific, Perkin Elmer, Stategic Diagnostics, TRS Scientific Glass and Varian.

The next Annual Meeting will be held on June 18-19, 2008. Further information will be available on our website (www.aoacpacnw.com). The 2007-2008 Executive Committee consists of Yash P. Kalra (Chair), Jim Hungerford (Chair Elect), Carlos Abeyta, Jr. (Past Chair), Mike Grant and Fred Krick (Treasurers), and Nancy Hill (Secretary). The Pacific Northwest Section is committed to serve as a primary resource for timely knowledge exchange, networking, and high-quality laboratory information for the Northwest scientists.

The AOAC INTERNATIONAL is a worldwide facilitator in the validation of analytical methods. It also serves as a primary resource for knowledge exchange among its members. It provides publications (such as the *Official Methods of Analysis of AOAC INTERNATIONAL*, OMA), hosts technical meetings and conferences, and offers training courses in areas such as laboratory management, quality assurance, accreditation, statistics, and measurement uncertainty. It was founded in Philadelphia in 1884 as the Association of Official Agricultural Chemists. In 1965, to recognize the expansion of its scope of interest beyond agricultural topics, the name was changed to the Association of Official Analytical Chemists. In 1991, it became the AOAC INTERNATIONAL, reflecting the expanding international membership and its focus as the "Association of Analytical Communities". AOAC's first Sections were established in North America, beginning with the Pacific Northwest Section in 1981. The Sections program expanded internationally with the founding of the Europe Section in 1989. The Pacific Northwest Section includes four states in USA (Alaska, Idaho, Oregon, and Washington) and two provinces in Canada (Alberta and British Columbia). "*Worldwide confidence in analytical results*" is AOAC's vision. Further information on the Association is available from: AOAC INTERNATIONAL, 481 North Frederick Avenue, Suite 500, Gaithersburg, Maryland 20877-2417, USA; Telephone: (301) 924-7077 or (800) 379-2622 (toll-free from North America); Fax: (301) 924-7089; Email: aoac@aoac.org.

Yash P. Kalra
Canadian Forest Service
Edmonton, Alberta, Canada
Email: ykalra@nrcan.gc.ca



WRB-Excursion on Technosols and Stagnosols Germany in August 2007

The soil groups Technosols and Stagnosols which were introduced very recently into the WRB (world reference base on soil resources) have been studied during an eight days lasting excursion throughout Germany. This excursion started in the Ruhr area in North-West-Germany, on-going in the area of Halle and South of Halle in Central Germany, finally forwarding to South-West Germany. Proposals for the improvement of the WRB taxonomy were formulated during the in-door discussion at Hohenheim University at the last day. Twenty-eight participants from twelve countries shared the excursion which traced back to a proposition from A. Lehmann (Hohenheim) during the IUSS conference in Philadelphia in 2006. Hence, he took over the general organization of the tour. The WRB working group of the IUSS (O. Spaargaren/ Wageningen und P. Schad/ Weihenstephan) was invited by the AK Bodensystematik (Working group on soil systematic of the German Soil Science Society, G. Milbert/ Krefeld).

In total 35 main and some additional soil profiles were shown, 26 anthropogenic soils and 9 formed by stagnant water from natural rocks. The time spent on anthropogenic soils and the time spent on the hydromorphic soils was nearly the same. This, because of longer distances to travel between the different soils with stagnant water.

The first part of the excursion took place at the starting point of the industrialization in Germany. This was in the anthropogenic strongly influenced Ruhr area.

The Technosols shown there were developed from transported soil material with addition of rubble, ashes, slags and mine spoil. These soils differed substantially in points of their functionality, in regard to the amount of in situ accumulated organic carbon, of decalcification, of alteration by stagnant water and in the occurrence of pedogenic formed minerals.

The natural soils influenced by stagnant water shown in the Ruhr area (annual precipitation: 820 to 930 mm, mean annual temperature: 9.6°C) were from unconsolidated sedimentary rock. Either from marine clay covered with fluvial sand and gravel or from Loess. An intense discussion about the interfering definitions of Stagnosols and Albeluvisols arose at the profiles.

In the evening of the second day, the excursion moved by train from the Ruhr area to Halle in Central Germany. There, the tour continued in the following morning. After a sound introduction into the area of Saxony-Anhalt, the excursion focuses on anthropogenic soils. Here, mainly soils developed from lignite ashes and other residues (oil residues and lime) of industrial processing have been discussed. Some discussions focused on the similarity and differences between Technosols from ashes and Andosols as well as of the current definition of artefacts.

The part of the tour in Central Germany was closed by the presentation of a natural soil in the Wermersdorfer forest (annual precipitation: 650 mm, mean annual temperature: 8,4 °C) influenced by stagnant water. There, Gustaf Adolf Kraus (1888-1968) developed the concept of "gleiartige Böden" which leads to the soil type Pseudogley in the German soil classification. Again, the overlap between Stagnosols and Albeluvisols was discussed at this site.

In the afternoon of the fourth tour-day, the group moved to Stuttgart and arrived there at late night. The following day and the morning of the last tour day was dedicated to a wide range of natural soils formed by stagnant water which were located on the Swabian Alb, in Upper Swabia and in the "Obere Gäue". Most of the presented hydromorphic soils were developed under 7-8° C mean annual temperature and 800-900 mm total annual rainfall. Only the hydromorphic soils presented on the following day in Stuttgart experienced 9 to 10°C annual temperature and 700 mm total annual rainfall.

At the last tour day again anthropogenic soils have been the main topic in the city area of Stuttgart. First, a dump site was visited. There, a Garbic Technosol heavily influenced by reductic gases, was developed. Starting from this 25 years old Technosol, three older anthropogenic urban soils have been shown. The oldest Technosol (from wastes and undisturbed for 85 years) showed intense in situ darkening.



Participants of the AK Bodensystematik – WRB Working Group excursion on Technosols and Stagnosols 2007 in the "Lehenpark" in Stuttgart-West

The following day was up to constructive discussion for completions and changes of the WRB-framework. The Techno-/ Stagnosols-Tour was also the 25th jubilee of the WRB working group, which was initiated from FAO in 1980 as a follow up of the "Soil Map of the World" project and established in 1982 from the IUSS. We all were glad to have the WRB-veterans R. Dudal und H.-P-Blume with us on the Techno-/ Stagnosols-Tour. This, in order to benefit from their long-term memory. Finally, we want to thank the numerous here not namely mentioned contributors for their support during the preparation and running of the excursion. Also, we want to thank the generous sponsors, notably the DFG (German Research Foundation), the Universitätsbund Hohenheim, the Farny- and the Eiselen foundation, the DBG (German Soil Science Society) und the IUSS.

An update of the 200 pages comprising excursion guide is scheduled for December 2007: <http://www.uni-hohenheim.de/soil/TechnoStagno2007GuideUpdate.pdf>

A. Lehmann, R. Jahn, , G. Milbert, K. Stahr, W. Burghardt, P. Schad

27th Congress of the Polish Society of Soil Science on the 70th jubilee of Society

The 27th Congress of PSSS was held from 3 – 7 September 2007 at the Agricultural University in Warsaw. The Congress was a celebration of the 70th anniversary of the foundation of the Polish Soil Science Society. After the opening ceremony hosted by the Minister of the Environment, plenary session lectures were presented by Prof. Stephen Nortcliff – Secretary General of IUSS, Prof. Donald Sparks – Past President of IUSS, Prof. Winfried Blum - President of the European Confederation of Soil Science Societies and Prof. Ahmet Mermut – Chair Division 1 of IUSS.

Some 220 soil scientists from Poland and 25 from foreign countries participated in the Congress with the theme 'Soils in Space and Time'. During the two days following the Opening Ceremony there were four parallel sessions covering many aspects of soil and environmental science and the management of the soil systems. During the Gala Dinner hosted by the Rector of the University, Professor Donald Sparks was made a Honorary Member of the Polish Society of Soil Science and the Golden Award of the Polish Society of Soil Science was made to Prof. Stephen Nortcliff, Prof. Stepan Poznyak (from Ukraine), Dr. hab. Goryachkin (from Russia) and Doc. Anton Zaujec (from Slovakia). After the Congress three scientific field excursions were held; one to research institutes in the Warsaw region; a one day excursion to examine soils and landscapes in the Warsaw region and a two day excursion to examine soils and landscapes in the south of Poland.



At the General Assembly of the Polish Society of Soil Science delegates elected the new Board for the period 2007-2011:

President	Prof. Dr Piotr Skłodowski
Vice-President	Prof. Dr Andrzej Mocek
Vice-President	Prof. Dr Bolesław Bieniek
Secretary	Associate Prof. Józef Chojnicki
Treasurer	Associate Prof. Zbigniew Zagórski

Józef Chojnicki
Secretary of the Polish Soil Science Society
Department of Soil Environment Sciences, Faculty of Agriculture and Biology
Warsaw Agricultural University
02-776 Warszawa, 159/37 Nowoursynowska Street
Poland
E-mail: jozef_chojnicki@sggw.pl

31th Brazilian Congress of Soil Science: Advances and Challenges of the Brazilian Soil Science

The Brazilian Soil Science Society (BSSS) was founded in 1947 to congregate people and institutions for the purpose of promoting and developing the Soil Science in Brazil. It is a scientific and private entity without profit aims, with more than 1,500 active members. To celebrate its 60 years anniversary, the BSSS held her 31th Brazilian Congress of Soil Science (BCSS) in August 5 to 10, 2007, in Gramado, State of Rio Grande Do Sul, under the theme "*Advances and Challenges of the Brazilian Soil Science*". During this meeting were pointed to the scientists who attended it the main needs in the Brazilian soil science in the near future. We had more than 3,500 attending, a total of 71 lectures and more than 2,400 presented scientific works, with a budget of about US\$ 420,000. All lectures and scientific works can be assessed at www.ufrgs.br/cbsc. This event became the largest scientific event in the agronomy and environmental sciences areas in Brazil.



Main group of professors and graduate students from 31th BCSS Organizing Committee.

During our general assembly there was the election for the new Directive Council of The Brazilian Soil Science Society for the period 2007/2009, as follow: President: Flávio A. Oliveira Camargo; 1^o Vice-President: Fernando Felipe Ferreyra Hernandez; 2^o Vice-President: Víctor Hugo Alvarez V.; Secretary: João Carlos Ker ; Finances: Reinaldo Bertola Cantarutti ; Councilers : Mateus Rosas Ribeiro (past president); Ricardo Simão Diniz Dalmolin; Renato Roscoe; Hedinaldo Narciso de Lima; Luciano da Silva Souza; Paulo Vidal Torrado.

Flavio Camargo
President of the 31th BCSS
fcamargo@ufrgs.br

E-mails received after the 31th BCSS:

Dear Flavio,

First of all congratulations on organizing an excellent conference, which was very well attended and contained some outstanding papers describing the cutting edge of soil science in Brazil. You and the members of your Organizing Committee must be commended for an outstanding job. I thank you for inviting me to the meeting. I had an excellent trip. All arrangements were outstanding. Attention was paid to the minutest details, especially with regards to the hotel in Porto Alegre and Sao Paulo. Everything worked out just fine. All flights were on schedule and I arrived Columbus on time. Once again, I thank you for the opportunity to participate in the conference celebrating the 60th anniversary of the Soil Society of Brazil. It was done in a highly professional manner to be proud of. You will make an outstanding president of this very prestigious society. Best regards to you and your family.

Rattan Lal
Professor of Soil Science, SENR
Director, Carbon Management and Sequestration Center, OARDC/FAES
President, Soil Science Society of America

Dear Flavio:

I want to take a few minutes to thank you again for your kind invitation and for the great time I had in Brazil. I wish I could have stayed longer, but the little time I spent in Gramado definitely made me want to know Brazil better. I was particularly impressed by the efficiency with which you



organized the meeting. I don't think I have attended a conference that was better organized. Congratulations!!!!
Thank you again!!
Very best regards.

Philippe Baveye

Upcoming Meetings

For details on the Upcoming Meetings see: www.iuss.org

2007

Society of Environmental Toxicology and Chemistry meeting 11-15 Nov **USA**
Soil forensics international workshop 30 Oct-1 Nov **UK**
ASA-CSSA-SSSA International annual meeting 4-8 Nov **USA**
Soil and wetland ecotoxicology 26-27 Nov **Spain**
Tropical soils under mulch-based cropping systems 3-7 Dec **Madagascar**

2008

International paleopedology conference 10-14 Jan **India**
High resolution digital soil sensing and mapping 5-8 Feb **Australia**
Archaeological Soil Micromorphology 3-4 April **Germany**
Lysimeters for global change research 23-25 April **Germany**
15th ISCO conference 18-23 May **Hungary**
9th In conference on precision agriculture 20-23 July **USA**
33rd International geological congress 5-14 Aug **Norway**
EUROSOIL Congress 23-31 Aug **Austria**
13th Int Conference on soil micromorphology 11-16 Sept **China**
Acid sulphate soil conference & acid rock drainage symposium 16-20 Sept **China**
5th International conference on land degradation 18-22 Sept **Italy**
ASA-CSSA-SSSA International annual meeting 5-9 Oct **USA**
International congress of irrigation and drainage 13-19 Oct **Pakistan**
Soil fertility, land management and agroclimatology 29 Oct-1 Nov **Turkey**
International conference on soil classification 9-16 Nov **Chile**
Interaction of soil minerals with organic components 24-29 Nov **Chile**
Sediment dynamics in changing environments 1-5 Dec **New Zealand**

2009

14th International Clay Conference 12-20 June **Italy**
ASA-CSSA-SSSA International annual meeting 1-5 Nov **USA**

2010

19th World Congress of Soil Science, Brisbane, 1-6 Aug **Australia**
ASA-CSSA-SSSA International annual meeting 31 Oct-4 Nov **USA**

2014

20th World Congress of Soil Science, Seoul, **South Korea**

New Publications¹

The Critical Pathway to Sustainable Development: from framework concept to conceptual framework. M. Staljanssens. Published by the author, 2005, various paging's. ISBN: 978-90-9021064-3. Softcover.

The author has a long experience in many parts of the world, and has developed in the course of time an integrative approach to resource management. A relevant workshop manual was published in 1995, and is now followed by the present reference book. It discusses the implementation of an integrative concept of pro-active decision-making in area-based land and sea resources management. The reader interested in this subject will find a brief overview of historical change in the field of land and water management, a summary of the reflection of the author and his experiences with this integrative approach, and guidelines for the implementation of the concept for sustainable development.

The book has the following parts and chapters: Part I. Introduction. Ch. 1. The origin of the concept; Ch. 2. The method. Part II. The concept per component. Ch. 3. Boundaries and boundary conditions; Ch. 4. Problems and issues; Ch. 5. Objectives and concerns; Ch. 6. Interaction and sustainability issues; Ch. 7. Alternatives; Ch. 8. Preferences and priorities; Ch. 9. Evaluation and inference. Ch. 10. Communication processes. Part III. Conclusions. Ch. 11. Practicalities and implementation; Ch. 12. Achievements and results. All chapters have a practical abstract, facilitating to find the appropriate information in the handbook. The book closes with a list with 423 references, a useful glossary, acronyms and figures. Throughout the text, many tables and figures are added.

Unfortunately, the book has no index, while the paging is per chapter. This innovative book presents a wealth of detailed data and information.

Price: EUR 30.00.

Orders to: Dr. M. Staljanssens, Pelmolenstraat 78, NL-7511 SC Enschede, The Netherlands. Fax: +31-53-4311922. Email: marc.staljanssens@aigx.be.

Field Guide Humus Forms. Description and classification of humus forms for ecological applications. B. van Delft, R. de Waal, R. Kemmers, and P. Mekking. Translated from Dutch by J. Sevink. Alterra, Wageningen UR, 2006, 91 p. Colour plates.

This field guide is an easily accessible source of information on the description of humus forms and the biological, physical and chemical processes involved. Focus is on an ecosystem approach that considers the humus form as the link between living and non/living nature. The guide starts with a chapter on the organic matter cycle and its role in ecosystem functioning. It provides a description of the role of the soil fauna and flora in the decomposition of organic matter and release of nutrients. The second chapter describes how the humus form can be studied and described in the field, and provides overall guidelines for the identification and description of individual horizons. A key for the identification of these horizons and a system for the description of these horizons are given in the third chapter. Together, these allow for a standardized description of the humus forms, irrespective of the type of ecosystem or physiographic unit concerned. The last chapter gives information to the humus form classification developed for the Dutch conditions, which can also be used in Northwest Europe. Although this classification system has a restricted applicability, the principles of the system for identification and description are rather universal. For more information about humus forms research, see the website www.humusvormen.wur.nl. The authors can be reached by emailing: bas.vandelft@wur.nl.

Price: EUR 15.00.

Orders to: Alterra, P.O. Box 47, 6700 AA Wageningen, The Netherlands. Fax: +31-317-419000. Email: info-alterra@wur.nl.

¹ The New Publication section is prepared by Hans van Baren (hans.vanbaren@wur.nl). Should you have a publication that you would like to have included in the next IUSS Bulletin, ask your publisher to send a review copy to: ISRIC-IUSS, PO Box 353, 6700 AJ Wageningen, The Netherlands.



Soil Use and Management. Volume 23, supplement 1, September 2007. Special issue on Agriculture, Phosphorus, Eutrophication: a European Perspective. P. Withers and Ph. Haygarth, guest editors. Blackwell Publishing, 204 p. ISSN 0266-0032, print; ISSN 1473-2743, online.

The enrichment of European waters with anthropogenic sources of nutrients (nitrogen and phosphorus), and the resulting impairment of water use for recreation, industry and drinking, has become a major environmental issue in recent decades. Concern over eutrophication first emerged in Europe's coastal waters with subsequent commitments by bordering countries to reduce nutrient emissions to the sea. National surveys of standing and flowing freshwaters in different EU countries also identified a widespread incidence of eutrophication and led to the development of various indicators to monitor trends in water quality. Whilst both N and P contribute to eutrophication, there is ample evidence that the main focus for reducing eutrophication should remain on phosphorus.

With the introduction of the EU Water Framework Directive in 2000, there is now a legislative framework to implement catchment controls over P inputs to EU waters from all sources, including those from agriculture. Controls over transfers of P from agricultural land have been judged a necessary part of the integrated catchment management needed to achieve the good ecological status demanded by Europe by 2015. In 1997, EU COST Action 832 (Quantifying the Agricultural Contribution to Eutrophication) was set up to help co-ordinate this research activity in order that the agricultural contribution of eutrophication could be more uniformly assessed across Europe. The specific aims of the Action were to develop a common conceptual understanding of the processes of P transfer to water and to identify appropriate methodologies for quantifying the use, cycling, transfer and impacts of phosphorus in runoff from agricultural land. The Action involved 18 countries. This Special Issue of Soil Use and Management, with 16 papers, draws together the knowledge base and selected research studies conducted across Europe as part of COST 832 and supporting national research programmes.

Orders to: Blackwell Publishing, Journal Customer Services. Fax: +44-1865-471775. Email: customerservices@oxon.blackwellpublishing.com. In USA and Asia: customerservices@blackwellpublishing.com.

Management of Tropical Sandy Soils for Sustainable Agriculture. A holistic approach for sustainable development of problem soils in the tropics. Khon Kaen, Thailand, 27th November to 2nd December 2005. Proceedings. 524 p. ISBN 978-974-7946-96-3. Softcover.

In contrast to the unproductive sandy soils of arid and desert regions that most people associate with, the light textured soils in the humid and semi-humid tropics are highly productive and of significant economic importance to many nations worldwide, supporting large numbers of people. These soils were once covered by climax forests with highly efficient ecosystems that have to a large extent been cleared for alternative use. The question that arises is – are current changed land use practices sustainable and for how long? This was the driver for the development of the symposium, which was held under the auspices of the IUSS and organized by L'Institut de Recherche pour le Developpement (IRD, France) and the Land Development Department (LDD, Thailand). It was attended by participants from 22 countries, with over 100 oral and poster papers.

The book with proceedings starts with the welcoming addresses and two key note addresses. Oral papers were presented in the following sessions; Session 1. Global extent of tropical sandy soils and their pedogenesis (6 papers); session 2. Socio-economic imperatives (2 papers); session 3. Chemical properties and their effect on productivity (10 papers); session 4. Physical properties of tropical sandy soils (9 papers); session 5. The role of organic matter and biological activity (9 papers); session 6. The management of these agro-ecosystems (17 papers); session 7. Successes and failures: stakeholders and development agencies perspectives in enhancing the livelihoods of communities on light textured sandy soil (7 papers). The 34 poster presentations conclude this book.

Requests to: Dr. Yuji Niino, FAO Regional Office, Maliwan Mansion, 39 Phra Atit Road, Bangkok 10200, Thailand. Fax: +66-2-697-4445. Email: yuji.niino@fao.org.

Unser Boden. Wir stehen drauf! Eine Initiative von Landeshauptmann Dr. Erwin Pröll. DVD Video 15 Minuten. Herausgeber, Autor und Medieninhaber: Abteilung Landentwicklung, Amt der Niederösterreichischen Landesregierung, St. Pölten, 2007.

This video pays attention to the different uses of the soil in Lower Austria, and its importance for safeguarding. It is an initiative within the framework of the Soil and Land Alliance of European Cities and Municipalities. (Boden-Bündnis Europäischer Städte und Gemeinden) to give information and educate school children as well as the general public about the soil and its value for housing, recreation, roads and, especially, food production. The text of the major part of the video is in German and English. The rest of the video is in German and contains a film made at the start of a special programme for school children in some communities on Soil Day (13 April 2007).

For more information about the project and various activities of the Soil and Land Alliance, visit the website www.soil-alliance.org.

Fertilizing for High Yield and Quality. CEREALS. IPI Bulletin 17. J. Wibberley. International Potash Institute, Horgen, 2006, 177 p. ISBN 978-3-9523243-0-1. Softcover. Small-grain cereals include wheat, barley, oats, rye, triticale, some millets and rice. All cereals make up a high proportion of most human diets (typically half daily intake and, in developing countries, even higher) and thus have a strategic place in many farming systems internationally. The present Bulletin has eight chapters covering: the global importance of these cereals; botany and physiology of these cereals; the role of plant nutrients in cereal physiology; nutrient requirements; cereal nutrient management and agro-ecology; effects of fertilizer use on yield and quality of small-grain cereals; cereals in rotation-integrated nutrition and protection; fertilizer and nutrient management practices.

Price: USD 10.00.

Orders to: IPI, P.O. Box 560, CH-8810 Horgen, Switzerland. Fax: +41-43-819-49-25. Email: ipi@pipotash.org. Website: www.ipipotash.org.

Geoderma. Volume 140, no. 4. 15 August 2007. pp. 323-456. Special Issue Pedometrics 2005. S. Grunwald, D.J. Brown and P. Govaerts, editors. Elsevier. ISSN 0016-7061.

This is the 8th special issue on pedometrics following the tradition to publish papers presented at Pedometrics meetings. This issue includes a subset of papers presented at the Meeting of Commission 1.5 Pedometrics of the IUSS. The meeting "Frontiers in Pedometrics" was held in September 2005 in Naples, Florida, USA. At the meeting a total of 36 oral and 16 poster papers were presented categorized into three topic areas: digital soil mapping; geostatistics; and soil sensing. The first two papers are focussed on the Matérn Covariance Function to predict soil properties and uncertainty propagation and sampling in geostatistical surveys. These are followed by a paper on a spatially-balanced complete block design for field experiments; and 5 papers on digital soil mapping applications, and two on the incorporation of remote and soil sensing methods explicitly into the respective soil prediction models. These papers may further stimulate the interest in incorporating pedometrics into soil studies.

Orders to: In the Americas: Elsevier, Customer Service Department, 6277 Sea Harbor Drive, Orlando, FL 32887-4800, USA. Fax: +1-407-363-1354. Email: usjcs@elsevier.com. Internet: www.elsevier.com. In Europe, Middle East and Africa: Elsevier, Customer Service Department, P.O. Box 211. 1000 AE Amsterdam, The Netherlands. Fax: +31-20-485-3432. Email: nlinfo@elsevier.com. UK. Internet: www.elsevier.com/locate/geoderma.

Geoderma Special Issue: Fractal Geometry Applied to Soil and Related Hierarchical Systems. Geoderma, volume 134, nos. 3-4, October 2006 pp 237-452. Y. Pachepsky, E. Perfect and M.A. Martín, guest-editors. Elsevier, Amsterdam.

Fractal geometry has long been advocated as a better representation of complex porous media as compared with simple Euclidean models based on straight lines and circle arcs. Twenty-five years of applications of fractal geometry in soil science showed the utility of this geometrical model in describing soil structure and texture, in simulating soil hydraulic properties and parameters of contaminant transport, in discriminating between soils under



different management, and in compressing measurement from data-rich advanced measurement technologies, such as laser diffractometry, scanning electron microscopy, computer-assisted tomography, and remote sensing, into meaningful and management-sensitive parameters. Fractal geometry is currently one of the best tools to address extreme events and rare occurrences that control changes of soil properties with scale. Recent developments in this field, including the application of information theory and multifractals to characterize natural hierarchical systems, were explored at the 6th International Workshop on "Fractal Mathematics Applied to Soil and Related Heterogeneous Systems" (PEDOFRACT 2004), which took place on July 2-6, 2004, at El Barco de Avila, Spain. The special issue contains contributions from workshop participants and provides a representative sample of the ongoing international effort to expand the use of fractal models in the Earth sciences.

Orders to: In the Americas: Elsevier, Customer Service Department, 6277 Sea Harbor Drive, Orlando, FL 32887-4800, USA. Fax: +1-407-363-1354. Email: usjcs@elsevier.com. Internet: www.elsevier.com. In Europe, Middle East and Africa: Elsevier, Customer Service Department, P.O. Box 211. 1000 AE Amsterdam, The Netherlands. Fax: +31-20-485-3432. Email: ninfo@elsevier.com. UK. Internet: www.elsevier.com/locate/geoderma.

Yakov Pachepsky, Beltsville, USA.

Water for food. Water for life. A comprehensive assessment of water management in agriculture. D. Mollen, editor. International Water Management Institute, Colombo and Earthscan, London, 2007, xvii + 645 p. ISBN 978-1-84407-396-2., softcover; 978-1-84407-397-9, hardcover.

Managing water resources is one of the most challenges of our times – fundamental to how we feed 2 billion more people in coming decades. eliminate poverty, and reverse ecosystem degradation. This book, involving more than 700 specialists, evaluates current thinking on water and its interplay with agriculture to help chart the way forward. It offers actions for water management and water policy – to ensure more equitable and effective use. This assessment describes key water-food-environment trends that influence our lives today and uses scenarios to explore the consequences of a range of potential investments. It aims to inform investors and policymakers about water and food choices in light of such crucial influences as poverty, ecosystems, governance, and productivity. It covers rainfed agriculture, irrigation, groundwater, marginal-quality water, fisheries, livestock, rice, land, and river basins. Ample tables, graphs, and references make this a very useful work for practitioners, academics, researchers, and policymakers in water management, agriculture, conservation, and development.

Price: GBP 34.95, softcover; GBP 95.00, hardcover.

Orders to: Earthscan, 8-12 Camden Street, London NW1 0JH, UK. Fax: +44-20-7387-8998. Email: earthinfo@earthscan.co.uk. Website: www.earthscan.co.uk.

Voices from the Forest. Integrating indigenous knowledge into sustainable upland farming. M. Cairns, editor. RFF Press, Resources for the Future, Washington, 2007, xv + 826 p. ISBN 978-1-891853-92-0, softcover; 978-1-891853-92-0, hardcover.

Shifting cultivation, swidden, or slash-and-burn agriculture, has a bad reputation. It is frequently viewed as a major contributor to deforestation, land degradation, and recently, to widespread smog in SE Asia. This reputation is largely undeserved, for the majority of traditional swidden systems are sustainable and feature a high labour productivity at low population densities. However, there are enough cases to the contrary to keep the negative image alive. These usually arise from destabilization of preciously sustainable systems as a result of such factors as rapidly increasing population pressure, the encroachment of commercial logging, forced migrations, and changing production incentives.

These cultivation systems refer to a multiplicity of different fallow and rotational arrangements, associated with a tremendous cultural diversity. It is not surprising, therefore, that the responses to these pressures and opportunities have also been highly

variable and on occasions, quite ingenious. There exist many successful systems of indigenous intensification, but they have never been systematically reviewed at the scale of the present book. A description and analysis of the multitude of these strategies would provide useful insights and directions for researchers and development practitioners alike, working on either avoiding or repairing the environmental, social, and economic problems resulting from the destabilization of shifting cultivation.

The book illustrates the enormous diversity of shifting cultivation systems and provides a striking testimony to human ingenuity. It sets out six fallow management typologies and presents case studies of each. The chapters show the richness of farmer experimentation and adaptation, and the frequency of complex or multiple systems within the same agroecosystem. More than 100 scholars from 22 countries, including agronomists, agricultural economists, ecologists, and anthropologists, collaborate in the analyses of different fallow management technologies. These have, in turn, worked closely with a cast of thousands of indigenous farmers of different cultures in a broad range of climate, crops and soil conditions. The book, which is limited to the Asia-Pacific region, has the following parts. Part I: Introduction (3 papers); Part II: Retention or promotion of volunteer species with economic or ecological value (10 papers); Part III: Shrub-based accelerated fallows (6 papers); Part IV: Herbaceous legume fallows (4 papers); Part V: Dispersed tree-based fallows (10 papers); Part VI: Perennial-annual crop rotations (6 papers); Part VII: Agroforests (14 papers); Part VIII: Across systems and typologies (9 papers); Part IX: Themes: property rights, markets and institutions (6 papers); and Part X: Conclusions. The book has 68 colour plates and closes with a botanical index, an index of nearly 100 ethnic groups living in the region, and a subject index.

Price: USD 50.00 softcover; USD 100.00 hardcover.

Orders to: Johns Hopkins University Press, 2715 North Charles Street, Baltimore, Maryland 21218-4363, USA. Fax: +1-410-516-6998. Internet: www.press.jhu.edu. Or: John Wiley & Sons, Distribution Centre, 1 Oldlands Way, Bognor Regis, West Sussex PO22 9SA, UK. Fax: +44-1243-843296. Email: cs-books@wiley.co.uk.

Pedological Biogeochemistry. O.K. Borggaard and B. Elberling. Department of Natural Sciences and Department of Geography and Geology, University of Copenhagen, 2007, 353 p. ISBN 87-989450-1-7. Softcover. Published by the authors.

The subject of this book is soil chemistry, i.e. the composition of soil air, soil solution and soil mineral and organic solids, and the interactions between these phases. The book's title emphasizes the importance of interacting biological and geochemical processes to understand soil genesis. Sustainable soil use requires appropriate knowledge about how different soils respond to various perturbations, which in turn, necessitates profound understanding of composition and properties of various soils. The soils considered in this book represent the soils of the World, although examples in the text are biased towards Danish soils. The first chapter gives an overview of basic pedology and includes definitions of soil terms, soil composition and components, and an outline of soil formation and classification with an introduction to Soil Taxonomy. The following 4 chapters discuss soil organic matter, soil minerals, soil solution and soil air. Mineral weathering is discussed in chapter 6, soil acidification in chapter 7, non-specific adsorption and specific adsorption are described in chapters 8 and 9. Soil salinization is considered in chapter 10, and the book closes with a chapter about redox processes. The book has many figures and tables. Interactive figures have been produced to provide possibilities for users to work with complex aspects of soil science. These figures can be found on the internet.

The book is specifically written for students interested in soil chemistry and pedology, but many students in related disciplines as well as professionals that need information about soils and soil processes will find this volume useful.

Price: EUR 70.00; USD 95.00, including packing and postage.

Orders to: Prof. Ole K. Borggaard, Department of Natural Sciences, University of Copenhagen, Thorvaldsensvej 40, DK-1871 Frederiksberg C., Denmark. Email: okb@life.ku.dk.



European Journal of Soil Science. Volcanic Soils – Thematic Issue. P. Buurman and C. Regalado, guest editors. Volume 58, no 2. April 2007. pp 355-515. Blackwell Publishing. ISSN: 1351-0754, print; 1365-2389, online.

Although volcanic soils are widespread throughout Europe, much of the research has been published in national journals and in a variety of languages. This precluded dissemination of European knowledge into the international literature. To bring together European knowledge, and address typically European environmental problems linked to such soils, a scientific study was funded by the EU under the name COST 622: "Soil resources of European volcanic systems". The participants came from 12 countries in Europe, representing disciplines as far removed as erosion control and soil organic matter chemistry. Experts from non-European countries participated as invited speakers at meetings and in the two workshops. A series of volcanic soils were described collectively, sampled and analyzed, resulting in a dataset that is unsurpassed worldwide. The present issue of the European Journal of Soil Science contains the last collection of papers of COST 622, after issues of Geoderma and Catena, and a book (Arnalds et al., editors, Soils of Volcanic Regions of Europe. Springer, New York, 2006). This book includes a CD containing all primary data – synthesizing the information collected during 5 years of this study.

Orders to: Blackwell Publishing, Journal Customer Services. Fax: +44-1865-471775. Email: customerservices@oxon.blackwellpublishing.com. In USA and Asia: customerservices@blackwellpublishing.com.

European Journal of Soil Science. Molecular Methods – Thematic Issue. M.H. Gerzabek, G. Haberhauer, K.-U. Totsche and D. Tunega, editors. Volume 58, no. 4. August 2007. pp 867-988. Blackwell Publishing. ISSN 1351-0754, print; 1365-2389, online.

Today, soil science is increasingly confronted with societal-driven research questions that cannot be answered by tools and techniques specifically developed for the typical spatial and temporal scale of soil research – the plot and bench scale and hours to years, respectively. Over the last two decades soil research has become ever more open to the macroscale, which involves remote sensing, geo-statistics and global modelling approaches. At the same time, it has also accessed the micro- and nano-scale, driven by the necessity to explore biogeochemical interfaces in soils at a molecular or even atomic level. These considerations led to an interest in the development of a more general understanding of the relationships between molecular characteristics of solutes and their interactions with biogeochemical interfaces in soils. Key elements of this endeavour include characterization and quantification of the molecular functionality and abundance of reaction sites of biogeochemical interfaces and their chemical activity. The 10 papers in this issue are organized into three groups. The first group represents papers in which quantum chemical methods are applied to treat specific problems related to soil chemistry. The second group covers the application of simulation methods based on combining molecular dynamics with classical molecular mechanics, where interatomic interactions are expressed via empirical formulas. This approach is often called the force-field approach. The third group consists of two papers focusing on experimental methods.

Orders to: Blackwell Publishing, Journal Customer Services. Fax: +44-1865-471775. Email: customerservices@oxon.blackwellpublishing.com. In USA and Asia: customerservices@blackwellpublishing.com.

Soils. Basic Concepts and Future Challenges. G. Certini and R. Scalenghe, editors. Cambridge University Press, Cambridge, New York, 2006, xvii + 310 p. ISBN 978-0-521-85173-2. Hardcover.

This book pays homage to Professor Fiorenzo C. Ugolini, an outstanding Italian soil scientist, who recently retired from university teaching and research. It is a synthesis of our present knowledge of soils, their genesis, functions and management. The book includes contributions from leading soil scientists from around the world and provides the basis concepts as well as the latest data and practical examples from across the discipline, including also many issues that are usually overlooked in other treatments. The book also discusses the increasingly important role of soils in enabling the preservation of life.

Chapter 1 changes in perceptions of soils and their classification are explored. Chapter 2 discusses soil forming processes. Chapters 3 to 7 contain information about the different soil phases. The inorganic fractions of the soil are treated in chapter 3; soil organic matter in chapter 4; the liquid phase is discussed in chapter 5, the gaseous phase in chapter 6, the living phase follows in chapter 7. After the State Factor theory of soil formation is discussed in chapter 8, the different factors of soil formation are treated in chapters 9 to 14. Soil functions and land use is discussed in chapter 15; physical and chemical degradation of soils in chapters 16 and 17. In the 18th and last chapter a number of questions are raised in view of soil research in the future. The appendix contains lists and short descriptions of genetic horizons, the World Reference Base for Soil Resources (WRB) and Soil Taxonomy (ST) systems, and the approximate correlation of the Reference Soil Groups of WRB and the Soil Orders of ST.

Price: GBP 70.00.

Orders to: Cambridge University Press, The Edinburgh Building, Shaftesbury Road, Cambridge, CB2 8RU, UK. Fax: +44-1223-326111. Email:

directcustserve@cambridge.org. Internet: www.cambridge.org. Or: Cambridge University Press, 100 Brook Hill Drive, West Nyack, NY 10994-2133. Fax: +1-845-353-4141. Internet: www.cambridge.org/us.

Soils. Genesis and Geomorphology. R. Schaetzl and S. Anderson. Cambridge University Press, Cambridge, New York, 2005, reprint with corrections 2007, xiii + 817 p. ISBN 978-0-521-81201-6. Hardcover.

In this comprehensive and accessible handbook the authors introduce the building blocks of the soil in Part I. They continue adding to the basic knowledge base in Part II (chapters 8-12), but add a great deal more material on theory and soil genesis/processes. In chapter 11, for example, a large dose of pedogenic and geomorphic theory is introduced, which in combination with the previous chapters allows to discuss soil genesis and pedogenic processes at length in chapter 12. Knowledge of soil genesis provides important information to scientists who classify them. Finally, considerable attention is given to examining soil landscapes over time and how soils can be used as dating tools and as keys to past environments. Part III is the synthesis section, for within it the authors pull together concepts introduced previously and apply them to problems of dating landscapes and understanding their evolution. Lateral flows of materials and energy link soil bodies to adjoining ones on the landscape, helping to reinforce the three-dimensional component. The use of many block diagrams shows the need for a holistic perspective on soils within the landscape. The book has a North American focus, but contains many data and examples of soil studies from outside this continent. As such, it can be a useful book for the global soils community. The book is well-illustrated with many clear figures, tables and few photographs. With over 80 pages references and a useful glossary of 50 pages and an extensive index, it is completed.

Price: GBP 45.00; USD 85.00.

Orders to: Cambridge University Press, The Edinburgh Building, Shaftesbury Road, Cambridge, CB2 8RU, UK. Fax: +44-1223-326111. Email: directcustserve@cambridge.org.

Internet: www.cambridge.org. Or: Cambridge University Press, 100 Brook Hill Drive, West Nyack, NY 10994-2133. Fax: +1-845-353-4141. Internet: www.cambridge.org/us.

The Soils of Israel. A. Singer. Springer-Verlag, Berlin and Heidelberg, 2007, x + 306 p. ISBN 978-3-540-71731-7. Hardcover. 978-3-540-71734-8. Online.

When preparing my first trip to Israel, to attend the Aridic Soils meeting in 1981 - held under the able leadership of Prof. Dan Yaalon a.o. -, I got hold of one of the few books about the soils in this country. It was written by A. Reifenberg, published in 1947 as a second edition, and was entitled "The Soils of Palestine". I also obtained a 1: 600.000 generalized soil map, published in 1955. Although much valuable soil research and extensive soil surveys have been carried out in Israel, and reported on at meetings, in scientific and other journals, a new book, at least in English, as a follow-up of Reifenberg's book, was not published until the present book appeared. This book gives a concise description of the soils of Israel, including their distribution, chemical, physical and mineralogical characteristics and agricultural attributes. On the background of the various



soil forming factors, such as the great variation of climate, lithology and physiography the pathways of their formation are discussed. The distribution of the different soil types is explained. Due attention is given to research results of the various studies carried out on paleosols with their paleogeographic significance. The presence of over 30 pages with 68 colour photographs is very illustrative and helpful. Fifteen pages with references and an index complete this book.

This is a welcome addition to your and my library!

Price: EUR 99.95; USD 139.00.

Orders to: Springer Customer Service, Haberstrasse 7, D-69162 Heidelberg, Germany.
Fax: +49-6221-345-4229. Email: orders@springer.de. Internet: springeronline.com.

Hans van Baren, Wageningen, The Netherlands

Fertilizer Best Management Practices. International Fertilizer Industry Association, Paris, 2007, vi + 299 p. ISBN 2-9523139-2-X. Softcover.

This publication is a compilation of the papers presented at the IFA International Workshop on Fertilizer Best Management Practices (FBMPs), held in 2007 in Brussels. The workshop was aimed at: Defining the general principles of FBMPs and the strategy for their wider adoption; Defining the role of the fertilizer industry in developing and promoting FBMPs, and identify priority areas for action; Exchanging information on experiences; Reviewing achievements and locating the gaps; and Understanding the actors and identifying the key partners. The workshop is a component of IFA's initiative on FBMPs launched in 2006. Next steps at the global level include the definition of a global framework for FBMPs, and the development of a web portal and of a set of indicators for measuring the performance of FBMPs. The main challenge remains at the national and local levels, where FBMPs have to be tailored to the specific needs of different farming systems.

The publication can be downloaded from IFA's website: www.fertilizer.org. For a paper copy contact: IFA, 28, rue Marbeuf, F-75008 Paris, France. Fax: +33-1-539305-45. Email: publications@fertilizer.org.

Sustainable Management of the Nitrogen Cycle in Agriculture and Mitigation of Reactive Nitrogen Side Effects. IFA Task Force on Reactive Nitrogen. International Fertilizer Industry Association (IFA), Paris, 2007, vi + 53 p. ISBN 2-9523139-1-1. Softcover.

Nitrogen (N) is a vital element for life. It is an essential component of all proteins and of DNA. On Earth there are two pools of N, with relatively little exchange between them: the gaseous dinitrogen (N₂) of the atmosphere, which makes up about 99% of total N, and the 1% of N that is chemically bound to other elements, such as carbon (C), hydrogen (H) and oxygen (O) and has been described as "reactive nitrogen", for its tendency to react with other elements. Gaseous N₂ is almost inert and cannot be used directly by most plants. It requires a high energy input to convert N₂ into plant available, reactive N forms. The N cycle refers to the circulation of N compounds through the Earth's atmosphere, hydrosphere and pedosphere. At various points in this cycle, reactive N compounds become involved in processes that can affect human health and the environment in both positive and negative ways. When improperly managed, N inputs can have adverse effects on the environment and human health. Lack of reactive N leads to soil fertility decline, low yields and crop protein content, depleted soil organic matter, etc. This booklet discusses the adoption of an integrated approach to nutrient management maximizing the benefits and minimizing the risks associated with the use of N sources, contributing to raising crop productivity and N use efficiency.

The publication can be downloaded from IFA's website: www.fertilizer.org. For a paper copy contact: IFA, 28, rue Marbeuf, F-75008 Paris, France. Fax: +33-1-539305-45. Email: publications@fertilizer.org.

Les Grands Sols du Monde (the Great Soils of the World). J-P. Legros. Presses Polytechniques et Universitaires Romandes, Lausanne, 2007, 574 p. ISBN 978-2-88074-723-7.

The aim of this publication is to provide, in French, an overview of the diversity of soils on a global scale, an insight in the processes of their formation and their distribution and an understanding of the influence of their characteristics on their use and protection. Of a total of fifteen chapters the first chapter is devoted to definitions of nomenclature, concepts and study methods which are essential for a full comprehension of the further text. It is a refresher of general soil science. Chapter two gives a detailed description of the factors of soil formation. Next to the classical factors of climate, parent material, time, relief and vegetation attention is also given to human influence such as terracing, fertilization, liming, manuring, irrigation, drainage, removal of stony material, polders, land leveling and pollution.

The third chapter deals with the basic theme of the book namely the 'progressive subsidence' ('enfouissement progressif') in soil formation, a geochemical process which over time leads to a sinking of the land surface to a lower level and the development of soil horizons. Traditionally soil formation is considered to consist of a transfer and movement of components such as iron, aluminium, carbon, clay, calcium carbonate and salts through a skeleton of silt and sand. It has mostly been overlooked that the skeleton is progressively emptied of its substance, which results in concentrations of residue and in soil collapse. This alteration proceeds along weathering fronts and results in the horizontal and lateral stratification of the soil profile. The textural and chemical composition of the soil horizons develops not only in function of internal movements and transfers but also in relation to external export. These phenomena are particularly observable in old soils of the intertropical zone but are also present in younger soils of temperate areas. The author suggests that this concept should be validated through modelisation and numerical simulation. He feels that a number of classical – sometimes dogmatic – theories of soil formation need to be questioned.

Chapter four gives an overview of the four systems of classification to which reference is made in the book: the French 'Commission de Pédologie et de Cartographie des Sols' (CPCS, 1967), the USDA Soil Taxonomy (ST, 1960-2006), the French Référentiel pédologique (RP, 1995) and the World Reference Base for Soil Resources (WRB, 1998-2006). Each of the four systems is analyzed in terms of their structure, nomenclature and criteria used for the differentiation of the units. In spite of the different approaches it appears that a certain congruence is emerging as reflected in the World Reference Base for Soil Resources. It is the latter system which the author uses for his review of the great soils of the world although he frequently refers to units in the other systems since these are still in use in current francophone literature. The 'progressive subsidence' applies geochemistry and mineralogy to study the spatial organization of the world's soil pattern. The author acknowledges to have given less attention to biology and organic matter issues which he considers to have been dealt with sufficiently elsewhere.

Chapters five through fifteen deal with clusters of the great soils of the world successively: 5, Ferralsols and other soils of warm regions; 6, Vertisols; 7, Calcisols; 8, Cambisol-Luvisols and Planosols; 9, Red Soils of Mediterranean and tropical dry areas; 10, Andosols; 11, Podzolized soils; 12, Gleysols-Stagnosols; 13, Histosols; 14, Solonchaks-Solonetz; 15, other soils.

Each of the chapters encompasses information on soil characteristics, spatial distribution, genesis, age, classification, agronomic and environmental notes. The coverage of the Ferralsols is very elaborate, their being the lead example of 'progressive subsidence'. The soil collapse is estimated at 20 m in a million years. The evolution of horizons is dealt with in great detail, compassing the full transition of lithostructure to pedostructure, the formation of ferruginous crusts and stonelines. A weak point of this chapter is that the Acrisols, considered part of the Ferralsol cluster ('sols tropicaux lessivés'), have not been dealt with separately. Acrisols are more extensive than Ferralsols in the world, have a different genesis and specific use and management requirements. Acrisols are great soils on their own merits. For the Vertisols the concept of 'progressive subsidence' is more difficult to demonstrate. However, the lack of a distinct differentiation of soil horizons is compensated by an evolution of the mineralogy throughout the development of Vertisols.



The chapters dealing with Luvisols and Podzolized soils present the processes of 'progressive subsidence' as alternatives to the conventional soil formation sequences of leaching and accumulation. The chapter on Red Soils of Mediterranean and tropical dry areas is the only one which is not using the WRB system. Emphasis is given to the fersiallitic nature of these soils, following the early French nomenclature. This approach may indicate a shortcoming of WRB in identifying the cluster of fersiallitic soils as a separate Reference Soil Group. Even though human influences on soil formation have appropriately been highlighted in Chapter two no chapter has been devoted to Anthrosols. Increased attention paid to Anthrosols in the last ten years clearly shows that few soils in the world have remained 'natural' which is increasingly reflected in updated soil classification systems. Chernozems, Phaeozems and Kastanozems have been relegated to a three page summary in Chapter fifteen, 'other soils', in spite of their productive importance and extension on a global scale. A reason may be the stated lesser relevance of organic matter issues in the geochemical cycle of soil formation. Some of the chapters are introduced by a pre-requisite facilitating the understanding of the main text, for instance the nature of the amorphous substances in the Andosols.

Each chapter is provided with an extensive bibliography. The existence of the FAO/Unesco 'Soil Map of the World' is briefly mentioned in the text. It is regretted that this publication is not referred to in the bibliography since it is the basis of the WRB and offers a cartographic synthesis of the great soils of the world (FAO, 1971-1981).

The publication is well supplied with explanatory graphs and photographs. An inlay of twelve pages of coloured photographs adds a field perspective even though the captions do not consistently trace back to the text of the study.

The 'Great Soils of the World' are in the first instance addressed to bachelor/master students in soil science and to those scientists who are especially involved in soil genesis and classification. It will be of particular interest to geographers, geologists and all those who are studying the diversity and the chemical and mineralogical composition of the planet's skin. The author recommends that soils be studied bottom upwards, from the lower alteration front to the overlying residual layers. He suggests that this approach may lead to reconcile geology and pedology and to rethinking the classical hypotheses of soil formation and of their impact on soil classification.

Price: EUR 61.60 plus taxes, packing and postage. In Switzerland: CHF 96.50, In France: EUR 65.00.

Orders to: Presses Polytechniques et Universitaire Romandes, Case Postale 119, EPFL – Centre Midi, CH-1015 Lausanne, Switzerland. Fax: +41-21-693-40-27. Email: ppur@epfl.ch. Internet: ppur.epfl.ch.

R. Dudal, Leuven, Belgium.

Interpreting Soil Test Results. What do all the numbers mean? P. Hazelton and B. Murphy. CSIRO Publishing, Collingwood, 2007, 160 p. ISBN 978-0-64309-225-9. Softcover.

The first edition of this text was written for officers in the then Soil Conservation Service of new South Wales, Australia, who were expected to interpret and give advice on a wide variety of soil management issues. In the present publication the original information has been reviewed and revised. The data contains test results that are more wide reaching than ever originally intended. The text is, therefore, useful for a wider range of professionals from agriculturalists to engineers. The data collected shows the large volume and diversity of information needed by all professionals who endeavour to provide advice on natural resources management. The interpretations and values provided are not intended for specific advice on particular problems or issues, but provide a general background on the variety of soil tests available and how the results may be interpreted. All chapters have lists of references and suggestions for further reading.

Price: AUD 59.95.

Orders to: CSIRO Publishing, P.O. Box 1139, Collingwood VIC 3066, Australia. Fax: +61-3-9662-7555. Email: publishing.sales@csiro.au. Website: www.publish.csiro.au.

Soils on the Global Agenda. Developing international mechanisms for sustainable land management. H. Hurni, M. Giger and K. Meijer, editors. Published by Geographica Bernensia on behalf of the IUSS, 2006, 64 p. ISBN 978-3-906151-93-X. Softcover.

A number of international mechanisms have recently included soils as a natural resource of vital importance. Be it for carbon sequestration, soil biodiversity preservation, ecosystem services, as a basis for agricultural production, or simply a living space soils have multiple functions that are vital to global sustainability. The present publication assembles information and experiences from a number of key stakeholders with a land management background. These specialists met in an international symposium, discussed their experiences, and developed priorities for further action in support of the World Soils Agenda, which was developed by the IUSS Working Group IASUS: International Actions for the Sustainable Use of Soils. Concrete actions are here proposed for improving international mechanisms in support of sustainable land management. It is hoped that the proposals in this well-written and lavishly illustrated publication will be picked up by policy makers and politicians, and that funding will come forward for further action. To achieve the goals, a wide distribution, especially outside the soil science community, is needed.

Requests to: Centre for Development and Environment, University of Bern, Switzerland.
Fax: +41-31-631-85-44. Email: cde@cde.unibe.ch. Website: www.cde.unibe.ch.

Sustainable Land Management Challenges, opportunities and trade-offs. Agriculture and Rural Development Series. World Bank, 2006, 138 p. ISBN 0-8213-6597-5.

Sustainable Land Management (SLM) is a knowledge-based procedure that integrates land, water, biodiversity and environmental management to meet rising food and fibre demands while sustaining ecosystem and environmental services and livelihoods. Due to varying combinations of political, social and economic factors, the mining of the natural resource base that has supplied a rapidly growing global population and economy has resulted in significant unintended mismanagement and degradation of land and associated ecosystem services. Scientific advances in the quantification of SLM-based environmental services at field and watershed scales underpin the growing market on payments for environmental services and incentives for SLM and the rehabilitation of degraded lands.

This book highlights the global extent of land degradation, quantifies current SLM investments and identifies SLM priorities, opportunities, and challenges in the face of significant but unpredictable climate change.

Price: GBP 11.50.

Orders to: Eurospan Group, 3 Henriette Street, Covent Garden, London WC2E 8LU, UK.
Fax: +44-1767-601640. Email: eurospan@turpin-distribution.com. Website: www.eurospangroup.com/bookstore.

Evaporation. Selection, Introduction and Commentaries. Benchmark Papers in Hydrology. J.H.C. Gash and W.J. Shuttleworth. International Association of Hydrological Sciences, 2007, x + 432 p. ISBN 978-901502-98-5. Softcover.

This volume in the new series of the IAHS is also of interest to soil scientists. The development of evaporation measurement techniques are documented first, commencing with the Wagon Wheel Gap catchment water balance (1921), through mass budget to water transfer methods, and use of scintillometry. Dalton's seminal essay On Evaporation (1802) starts the selection of papers on evaporation estimation, which then covers atmospheric controls on the evaporation process (the original Penman and Thornthwaite papers are reproduced), vegetation controls via transpiration and interception, and finally evaporation as a component of the global climate system. The Commentaries explain the context and significance of each of these important papers.

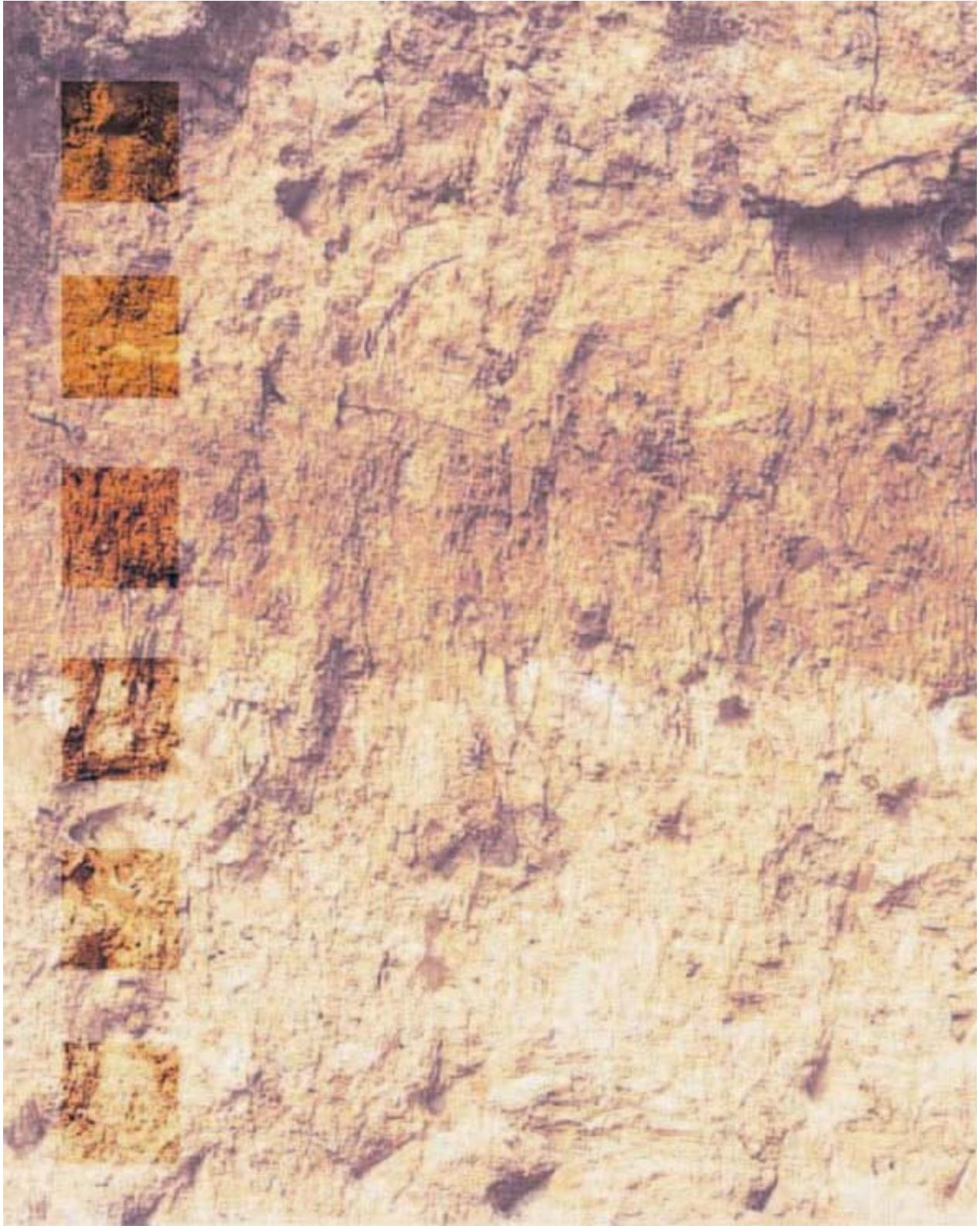
Price: GBP 40.00.

Orders to: Mrs. Jill Gash, IAHS Press, Centre for Ecology and Hydrology, Wallingford, Oxfordshire OX10 8BB, UK. Fax: +44-1491-692448. Email: jilly@iahs.demon.co.uk. Internet: via: www.iahs.info.



IUSS Honorary members

	Member		Year	Member	
1924	L. Cayeux †	France	1986	H. Jenny †	USA
	K. Glinka †	USSR		D. Kirkham †	USA
	Jos. Kopecky †	Czechoslovakia		S.K. Mukherjee †	India
	E. Ramann †	Germany		R. Tavernier †	Belgium
	Sir John Russell †	UK	1990	G. Aubert	France
	S. Winogradski †	USSR		E.G. Hallsworth †	Australia
1927	P. Treitz †	Hungary		J.S. Kanwar	India
1935	E.A. Mitscherlich †	Germany		P. Schachtschabel †	Germany
	A. d'Sigmond †	Hungary		R.W. Simonson	USA
	J. Stoklasa †	Czechoslovakia		I. Szabolcs †	Hungary
	G. Wiegner †	Switzerland	1998	G.H. Bolt	Netherlands
1950	A. Demolon †	France		R. Dudal	Belgium
	D.J. Hissink †	Netherlands		K.H. Hartge	Germany
	W.P. Kelley †	USA		M. Kutilek	Czech Rep.
1954	S. Mattson †	Sweden		J. Quirk	Australia
	E. Truog †	USA		W.G. Sombroek †	Netherlands
1956	G. Bertrand †	France		K. Wada	Japan
	E.C.J. Mohr †	Netherlands		D.H. Yaalon	Israel
1960	F.A. Bear †	USA		S.V. Zonn †	Russia
1964	J.A. Prescott †	Australia	2002	R.W. Arnold	USA
1968	F. Hardy †	UK		G.V. Dobrovolsky	Russia
	W.L. Kubienski †	Germany		W. Gardner	USA
	L.A. Richards †	USA		H.M. Hamdi †	Egypt
	A.A. Rode †	USSR		L.A.L. Sarmiento	Colombia
1974	R. Bradfield †	USA		F. Mancini	Italy
	G.V. Jacks †	UK		B.S. Nosko	Ukraine
	Ch.E. Kellogg †	USA		R. Rosell	Argentina
	M.K. Kononova †	USSR		A. Ruellan	France
	A. Oudin †	France		A. Tanaka	Japan
	F. Scheffer †	Germany		P.B.H Tinker	UK
1978	G. Barbier †	France	2006	W.E.H. Blum	Austria
	V. Ignatieff †	Canada		H-P. Blume	Germany
	Y. Ishizuka †	Japan		J. Bouma	Netherlands
	L. Krolikowski †	Poland		S-J. Cho	South Korea
	L. Vettori †	Brazil		J. Glinski	Poland
1982	Ph. Ducloux †	France		M.G.H. Jamagne	France
	W. Flaig †	Germany		D.R. Nielsen	USA
	V. Kovda †	USSR		J.H.V. van Baren	Netherlands
	E. Mueckenhausen †	Germany		L.P. Wilding	USA
	E.W. Russell †	UK			



Printed by Propress BV, Wageningen

ISSN 0374- 0447

**© Copyright IUSS, P.O. Box 353
6700 AJ Wageningen, The Netherlands
Price US\$ 25.00**



Printed by Propress BV, Wageningen

ISSN 0374 - 0447

**© Copyright IUSS, P.O. Box 353
6700 AJ Wageningen, The Netherlands
Price US\$ 25.00**