

IUSS Bulletin

Bulletin of the International Union of Soil Sciences (IUSS) | May 2009



114



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. All contributions are welcome and should be sent to the editor.

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ISSN 0374-0447



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Editorial

There is much going on in soil science. The era of doom and gloom and the idea that the discipline is in a poor state is over in most parts of the world. There are heaps of new projects creating many new job positions in a period that unemployment rates explode in several countries. It may be caused by the increasing interest in food production, the need for sustainable agriculture and the overall awareness of the soil as a natural capital – not only for our daily food but also related to the water supply and even: the weather. It may also be sparked by the financial crisis causing an apparent wish of many governments to make strategic investments in times of financial and market uncertainty.

The already infamous ‘Restore science to its rightful place’ implies considerably more funds for the sciences. However, views differ how the recession influences scientific directions and *Nature* summarised this as follows: ‘Science is key to nation-building during a recession but scientists must learn to convince politicians of the need to protect research budgets. Building global links and breaking down the barriers between disciplines is vital if the world is to weather the financial squeeze. Central banks must also end their obsession with cutting interest rates and technology start-ups will need to cut costs and sell what they can. A stimulus package for the developing world could, however, benefit everyone.’ (www.nature.com/recessionwatch). This all affects soil science and its funding in a positive way.


Perhaps the current soils focus of governments and UN institutions follows the increased interest of the general public in soils and the environment - whether that has happened through the soils thematic issue of the *National Geographic* (September 2009) or the development of a home-garden at the White House premises. Scientists, including those that study soils, also realise that in modern society scientific input is essential and policy debates cannot be escaped. As *Nature* recently wrote: ‘..if responsible researchers do not



With the hands in soil (hoe, hoe, hoe) following the adagiums: *Garden to cut food costs and Plant a Victory Garden.*

offer their opinions on policy, others will.’ As a result, soil legislation is slowly but steadily developing in many countries and also at the EU level. Soils have entered the policy arena.

Whatever the reasons are, the widespread interests and new projects in soil science coincide with a quantum leap in the development of technologies to measure, monitor and map soils. It occurs at a scale that could not be envisioned before and importantly: with an accuracy and measured uncertainty that is demanded by the users of soil information. The result is that we have a little better understanding of the temporal and spatial pattern of soils. Our soil science journals contain daily examples of this all; over 17,000 soil science articles appear annually. Of course there is dilution and some recycling of ideas but these articles are not written by machines and it clearly shows that soil science is thriving.



The IUSS keeps promoting soil science and supporting all its activities across the globe. The Bulletin, published since 1952, is one of the examples and aims to inform the soil science community on its many activities and its many branches. Our good friend Hans van Baren has been involved with the Bulletin since the early 1970s. He was the Deputy Secretary General from 1990 to 2002 and book review editor of the Bulletin – Hans passed away on 27th January 2009. He spent most of his working life in soil science, promoting it as a discipline, and establishing a fine network of institutions and soil scientists across the world. That has been of great benefit to the ISSS/IUSS and also to ISRIC where Hans worked and continue to work since his retirement in 1997. I took over his position in 2002. Now our weekly coffees and discussions are over, I will continue to work in his spirit and can only strive to serve the global community of soil scientists as good as he did – with the wind in the sails.

Alfred Hartemink
Deputy Secretary General

Call for Papers

19th World Congress of Soil Science



The Organising Committee of the 19th World Congress of Soil Science is now calling for papers. The Congress theme 'Soil solutions for a changing world' will provide a tremendous opportunity to share research, ideas and knowledge on a very broad range of soil-related topics in a global forum.

If that's not enough to entice you, then perhaps we should let you know that the Congress is being held in Australia, in the heart of sunny Queensland's capital city, Brisbane.

The Congress Organising Committee has developed a stimulating program with symposia covering a range of topics from the four divisions of the IUSS. The Congress theme 'Soil solutions for a changing world', is woven into the symposia topics, which highlight challenges currently being faced by the global population, including climate change, food security and sustainable soil management.

The symposia topics include these contexts:

- Small to large – Biogeochemical interfaces to global information systems
- Low to high – Wetlands to highlands
- North to south – Permafrost to the tropics
- Start to finish – Genesis to classification and education
- Old to new – History and philosophy to attracting young scientists

The promotion of soil as an important and precious natural resource to young scientists and the broader community is an important goal of the Congress. The Organising Committee of the 19th World Congress of Soil Science invites you to be a part of it!

For a full list of the Congress symposia, requirements for paper submission, important dates and further information about the 19th World Congress of Soil Science please visit the website www.19wcss.org.au

The conference will be held at the Brisbane Convention and Exhibition Centre in the heart of Brisbane's famous South Bank parklands, Within minutes of leaving the Centre you can be strolling along the Brisbane River taking in the city views, or dining in some of the best restaurants Brisbane has to offer. The Greater Brisbane region and Southeast Queensland offers spectacular natural features including the World Heritage Listed areas of the Scenic Rim, wetlands of international significance and the sand islands of Moreton Bay with giant podzols!

The Congress will offer the best of Soil Science in a fabulous destination – don't miss out!



New Secretary General and Deputy

At the Council Meeting in Brisbane I indicated that, after two terms in office, I would step down as Secretary General in 2010. The President, Roger Swift has established, under the Chairmanship of former President Don Sparks, a Search Committee for a new Secretary General and Deputy Secretary General. Brief outlines of the posts are available at the IUSS website, visit [www.iuss.org/IUSS DG-SDG positions.pdf](http://www.iuss.org/IUSS_DG-SDG_positions.pdf). Colleagues wishing to be considered for the position or to suggest possible candidates should contact Don Sparks at dlsparks@udel.edu

Stephen Nortcliff,
Secretary General

Duty Statement for the position of Secretary General

The International Union of Soil Sciences (IUSS) seeks applicants for the position of Secretary-General (SG). The position would be effective at the conclusion of the 19th World Congress of Soil Science in Brisbane, Australia in 2010. The SG plays a key role in the leadership, administration, and management of IUSS and works closely with the President and other senior officers to advance the objectives of the Union.

Duties include:

- day- to-day management and administration of IUSS including close communication with IUSS officers, national member societies and representatives, and individual members;
- representation of IUSS at meetings of national member societies, the International Council of Science (ICSU), and other organizations such as the FAO, UNESCO, and Year of Planet Earth;
- conducting elections of division and commission officers; working with the IUSS Treasurer and Chair of the Budget and Finance Committee to ensure the collection of dues and certification of members;
- in concert with the President, members of the Bureau and with other IUSS officers, prepare and disseminate the agenda, reports, and minutes for Executive Committee and Council meetings; and,

- in collaboration with the Deputy Secretary General, publish the IUSS Bulletin.

Qualifications: an internationally recognised soil scientist with a distinguished, record of accomplishment within academia, industry or government; a record of participation and leadership in IUSS and knowledge of IUSS structure and activities; stability and flexibility in employment; support of employer in terms of time commitments to the position and use of facilities (office, computer, telephone, photocopying, printing, etc.); a level of financial support from employer/country to support the activities of the SG (e.g., secretary, travel, etc.), outstanding interpersonal and organizational skills; excellent English and communication (writing and speaking) skills; and willingness to travel to meetings around the world to represent IUSS.


Duty Statement for the position of Deputy Secretary-General

The International Union of Soil Sciences (IUSS) seeks applicants for the position of Deputy Secretary-General (DSG). The position would be effective at the conclusion of the 19th World Congress of Soil Science in Brisbane, Australia in August, 2010.

The DSG plays an important role in the leadership, administration, and management of IUSS.

Duties include: assisting the Secretary General when needed; maintenance of the IUSS website; responsibility for the IUSS Bulletin; and dissemination of further information about IUSS, e.g., 'IUSS Alerts'.

Qualifications: a highly-qualified soil scientist with a record of accomplishment in academia, industry or government; a record of participation and leadership in IUSS and knowledge of IUSS structure and activities; stability and flexibility in employment; support of employer in terms of time commitments to the position and use of facilities (office, computer, telephone, photocopying, printing, etc.); a level of financial support from employer/country to support the activities of the DSG (e.g., secretary, travel, etc.),



outstanding interpersonal and organizational skills; excellent English and communication (writing and speaking) skills; and proficiency in information technology.

In both positions the capacity to serve for two terms, i.e. from 2010-2018 is desirable but not a prerequisite.

The Search Committee is chaired by Past IUSS President Don Sparks (dlsparks@udel.edu) (USA) and has Winfried Blum (Austria), Bob Gilkes (Australia) and Jae Yang (Korea) as members.



Divisional Reports

Division I

A new Working Group was proposed to IUSS Council for a new Working Group on Global Soil Change that explores pedological implications of environmental change caused by global warming and human activities on soils and landscapes. The proposal was initiated by D. Yaalon, Hebrew University, Israel. The objective of the new Working Group is 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. We hope endeavour to tap this activity and bring the expertise to focus on a global discussion of carbon budgets and climate change, particularly as soils and soil carbon are now widely recognised as having a key role in these contexts.

Commission 1.1: Soil Morphology and Micromorphology

- Organized a successful 13th International Meeting on Soil Micromorphology, Chengdu, Sichuan Province, China. Sept. 11-16, 2008. Discussions took place about the future of soil micromorphology and Kubiena award,
- 1st Conference on Commensalism with Landscapes, Sinai - Egypt, November 22-26, 2008. It was organized in 'Bedouin' traditional atmosphere.

Commission 1.2: Soil Geography

- New Horizons in Soil Geography meeting will be held in Puerto Escondido, Oaxaca, Mexico 26-30 of October 2009. This is a welcome meeting after a long time we had no international meetings on soil geography. Thanks to Prof. Pavel Krasilnikov's initiative.

Commission 1.3: Soil Genesis

- International Conference on Hydropedology held July 28-31, 2008 at Penn State University Park campus.

- 5th International Conference on Land Degradation Valenzano, Bari, Italy 18-22 September 2008 at the Mediterranean Agronomic Institute of Bari, Italy was held the 5th International Conference on Land Degradation (5ICLD). The event was attended by about 100 participants from 37 countries worldwide.
- It is still not too late to take part in the Ninth International Conference on Permafrost (NICOP), that will take place on June 29 July 3 2008 in Fairbanks, Alaska. The Conference is supplemented by interesting field trips.
- 9th International Meeting on Soils with Mediterranean Type of Climate. He meeting will be held in Beirut, Lebanon, June 22-26 2009.

Commission 1.4: Soil Classifications

- An international scientific-practical conference was organized on 'Problems of soils classification and diagnostics' September 25 28 2008 in Yuri Fedkovych Chernivtsi national university (department of soil science and land management).

Commission 1.5: Pedometrics

Members of the Working Group have been instrumental in developing new technologies for measuring and predicting soil properties and we are keenly aware of the opportunities for dramatically improving access to soil scientific knowledge.

- Digital soil mapping European Geosciences Union General Assembly 2008 (Vienna, Austria, 13 18 April 2008).
- The 3rd Global Workshop on Digital Soil Mapping was held between 30 September and 3 October 2008 at Utah State University, Logan, Utah, USA The theme is 'Digital Soil Mapping: Bridging Research, Production, and Environmental Application.'

Commission 1.6: Paleopedology

- 'Palaeosols, Geomorphic Evolution of Landscape and Paleoclimate Change', held in Chennai, India, 10-14 January 2008. The International Conference and Field Workshop on Paleopedology named 'Paleosols, Geomorphic Evolution of landscape and Paleoclimate Change', organized by the Department of Geology, Anna University), took place in Chennai (Madras), India.

Ahmet Mermut, Canada

Division 2

The most important activity for all Commission Chairs and Vice Chairs within Division 2 was the planning of symposia for next year's World Congress of Soil Science in Brisbane, Australia. Division 2 Vice-Chair Chris Smith took the lead in coordinating this effort. During the last year, our Division was also actively involved in the organization of two interdisciplinary workshops. The workshop entitled '*Contaminant Dynamics in Periodically Flooded Soils*' was held on August 27, 2008, during the *Eurosoil 2008* Congress in Vienna, Austria. About 80 participants attended this very successful workshop. In four invited keynote lectures, seven contributed talks and eight poster presentations, recent advances in understanding chemical, physical, mineralogical, and microbiological processes controlling the dynamics of inorganic and organic contaminants in soils under fluctuating redox conditions were presented and discussed. Our Division also contributed to the organization of the workshop '*Micro Soil: Integrating Biological, -Physical, and -Chemical Techniques for the Study of Soil Micro-Habitats*' to be held at the University of Abertay, Dundee, UK on September 16-17, 2009. The aim of this international workshop is to bring together current leaders in the field of modern physical, microbiological and chemical techniques that can quantify the soil micro-environment, together with modelers and statisticians.

Activities of Commissions

Commission 2.1: Soil Physics


was mainly active in the organization of the Biohydrology conference to be held in Bratislava on September 21-24, 2009. Well over 100 participants have already registered for this meeting that integrates soil physics, hydrology, and biological sciences. The focus of this meeting will be the impact of climate change on water resources and biological systems. Sessions cover a diverse range of topics ranging from pore scale processes to soil management techniques to improve physical conditions for plant growth. In the run-up to the World Congress in 2010, the commission has also organized sessions at the ASA/SSSA meeting in November 2009. These sessions deal with modeling soil physical processes that regulate water transport, carbon sequestration, root growth, and systems modeling in field research.

Commission 2.2: Soil Chemistry

was co-organizer of the Eurosoil Congress held in August 25-29, 2008 in Vienna. In total, about 1500 participants from 77 countries attended with about 650 oral and about 750 poster presentations, within 30 Symposia and 13 Workshops and 3 technical excursions. Among others, the session '*Buffering Functions of Soils (S13)*' held a scientifically highly successful and well attended meeting. In 2009 the Commission 2.2 organizes the second IUSS-DFG symposium on '*Advances of Molecular Modelling of Biogeochemical Interfaces - Perspectives for Soil Research*', October 6-7, 2009, Altes Schloss Dornburg, Jena, Germany. The focus of this symposium will be on a broad range of molecular modeling methods (from force-field based to ab-initio quantum chemical) including Monte Carlo and molecular dynamics techniques and their potential to contribute to better understanding of functionalities of biogeochemical interfaces in soils and help to interpret macroscopic observations in soils. Additionally, the planned symposium is open for the presentation of various experimental techniques combined with molecular modeling studies confirming the importance of such combination for soil research. For example, contribution in the field of micro-calorimetry, Nano-SIMS, AFM, XANES and similar technologies are warmly welcome. (See: www.spp1315.uni-jena.de/Symposium+2009.html).

Commission 2.3: Soil Biology

has been active in the organization of the session '*SSS24 Soil Microbial Activity: Assessment, Monitoring and Modeling*' (Conveners: P. Nannipieri, C. Guerreo, C. Trasar-Cepeda) at the EGU in Vienna, April 13-18, 2008. Six oral presentations and several posters were presented. The Commission's Chair, Dr. Nannipieri, has also chaired a Committee for the *Biology and Fertility of Soil* Award to the best poster presented at the EUROSIL meeting in Vienna in sessions whose scientific description fitted within areas covered by the journal. Other members of the committee were Angela Sessitsch (Austria), Kornelia Smalla (Germany), and David Hopkins (UK), who examined the posters selected by conveners of the sessions. The committee nominated Mingrelia Espana, the first author of the poster entitled '*¹⁵N-DNA Stable Isotope Probing to Assess the Active Soil Microbial Community Involved in Plant Residue Decomposition Process*', as the winner of the award. The co-authors of the poster were Frank Rasche, Thomas Brume, Ellen Kandeler and George Cadisch, all from the University of



Hohenheim, Stuttgart, Germany. The winner has received a free subscription to the print and the electronic edition of the journal *Biology and Fertility of Soil* in 2009.

Commission 2.4: Soil Mineralogy

has organized a Session at the XIVth International Clay Conference to be held at Castellaneta Marina in the south of Italy, June 14-20, 2009. The session is entitled '*Contributions of Soil Mineralogy to Solve Agricultural, Technological and other Practical Problems*'. The Session will include 20 oral and 18 poster presentations, subdivided into four main blocks:

1. 'Non-agricultural', including a keynote paper by Dr. Rob Fitzpatrick (Australia) and papers on applications of mineralogy to landslides and forensic problems as well as on rheology.
2. 'Mineralogy', including papers on quantitative XRD, oxides, palygorskite, and on minerals in soils on basic and ultrabasic rocks and on sandstone.
3. 'Aggregation and physics', including papers on organic matter in soil clays, clays in aggregates, shrinking and swelling, clays and geophysics and geotechnical applications.
4. 'Environment and agriculture', including papers on the mineralogy of lead, zinc and nickel and of calcareous soils.

The poster papers cover a similar range of topics. The range of topics, as well as the approaches involved (ranging from STXM and NEXAFS analyses through to EMI and GPR surveys) augurs well for both the Session and for Soil Mineralogy and the Commission's activities at the World Soil Conference next year.

Commission 2.5: Soil Chemical, Physical and Biological Interfacial Reactions

has organized the '*5th International Symposium of Interactions of Soil Minerals with Organic Components and Microorganisms*' (5th ISMOM) held in Pucon, Chile, November 24-29, 2008. The symposium was devoted to '*Soil-Root-Microbe Interactions and the Impact on the Transformations and Fate of Nutrients and Pollutants in the Ecosystems*'. There were more than 250 participants from 42 countries of the 5 continents attending 5 oral and 5 poster sessions with presentations concerning physicochemical and biological interactions from the molecular to the ecological level, pertaining to the dynamics, transformations, bioavailability and toxicity of metals, metalloids, anthropogenic organics and vital elements. The national organizing committee was very active and

efficient and hosted a fruitful, successful and friendly symposium. This meeting is held every four years.

Other activities of Commission 2.5 included:

- participated in the 4th French-German Summer school entitled '*Functions of Microbial Communities in Soils: Impact of Anthropisation and Sustainable Use*' held September 8-19, 2008, in Nancy (France). The aim was the presentation and discussion of the newly acquired knowledge on the ecology (dynamics and functions) of microbial communities in soils of different use and contamination (forest, agricultural, urban and strongly anthropic, e.g., post industrial soils).
- sponsor the '*19th International Symposium on Environmental Biogeochemistry*' to be held in Hamburg, Germany, September 14-18, 2009, and most particularly two major sessions concerning the soil as a biogeochemical interface and soil-plant-microorganisms interactions.
- support the symposium '*Interactions between Clays and Inorganic and Organic Pollutants*' of the 14th International Clay Conference, Castellaneta Marina, Italy, June 14-20, 2009.
- contribute to the organization of the '*International Symposium of Molecular Environmental Soil Science at the Interfaces in the Earth's Critical Zone*', Hangzhou, China, 10-14 October, 2009.

Ruben Kretzschmar, Switzerland

Division 3

Under the umbrella of IUSS Division 3 are 5 commissions and 5 working groups:

Commission 3.1 deals with 'Soil Evaluation and Land Use Planning', Commission 3.2 with 'Soil and Water Conservation', Commission 3.3 with 'Soil Fertility and Plant Nutrition', Commission 3.4 with 'Soil Engineering and Technology', and Commission 3.5 with 'Soil Degradation Control, Remediation, and Reclamation'. Working groups are Acid Sulphate Soils, Salt Affected Soils, Forest Soils, Urban Soils - Soils of Urban, Industrial, Traffic, Mining and Military Areas (SU/SUITMA), and newly established in 2008, a Working Group on Paddy Soils, chaired by Ho Ando, Japan.

The Chair of division 3 took part in 2008 at the 2nd Workshop Lysimeters for Global Change Research, Muenchen - Neuherberg, Germany, 15th ISCO - Congress, Budapest, 3rd EUROSIL Congress, Vienna, Austria, International Meeting on Soil Fertility, Land Management and Agro-climatology, Kushadasi,



Turkey, in Brussels, Belgium, at the 1st Forum for the Future of Agriculture-Debate on the Objectives for European Agriculture, the Conference Climate Change - Can Soil Make a Difference, the Conference European Biodiversity, the Private Solution. to get an oversight about the newest state of soil investigation and management techniques and targets, to represent IUSS and to campaign for the 19th World Congress of Soil Science in Brisbane and other IUSS activities. On the IUSS Inter-Congress meeting in Brisbane the Chair and Vice Chair of IUSS Division 3 represented and organized the interests of IUSS Division 3.

In 2009 the Chair plans to attend, beside national meetings, the International Conference of ESSC on Protection of the Ecological and Productive Functions of Soil in a Pan European Context in Prague - Pruhonice, Czechia, the 5th SUITMA (Urban Soils) Conference in New York, USA, the symposium of IUSS Commission 3.4 on Soil Engineering and Technology for Human and Ecosystem Health, Plant Nutrition and Human Welfare in Seoul, Korea, and the 5th Conference of African Soil Science Society in Yaoundé, Cameroon to strengthen links of IUSS to Africa, Asia and modern tasks of soil science such as soil technology and engineering, soils of urban areas and loss of soils by sealing.

A main part of activities within the Division 3 concerns the 19th World Congress of Soil Science, August 1-6, 2010 in Brisbane, Australia. All commissions and working groups of IUSS Division 3 will organise symposia. 21 symposia were proposed and arranged. There are also a number of other meetings in preparation. The Division Chair is organising an International Conference on Soil Fertility and Soil Productivity at March 17-20, 2010 in Berlin, Germany (see: www.uni-due.de//soil-fertility-productivity2010/index.shtml) with the aim to focus international soil science on the urgent needs for food and energy supply of a world with increasing population, increasing income and by this demand of higher food quality, but also with a strong focus on soil investment-return relationship applied to soils.

Commission 3.4 - Soil Engineering and Technology will arrange a symposium Soil Engineering and Technology for Human and Ecosystem Health, Plant Nutrition and Human Welfare within the 9th Int. Conf. of East and Southeast Asian Federation of Soil Science about Soils as a Convergent Technology in Tandem with Human and Ecosystem Health. - Enhancement of Soil Performances for Well-being-, October 27-30, 2009, Seoul, Korea (see more: www.esafs9korea.org).

The Acid Sulphate Soils Working Group was engaged in the Acid Sulphate Soil Conference & Acid Rock Drainage Symposium in China, September 2008. The Salt Affected Soils Working Group will have a conference on Salinisation in September 20 to 22, 2009 (see: www.taki.iif.hu/sasconf/home.html). The new Chair and Vice Chair of Urban Soils Working Group (SU/SUITMA) are Jean Louis Morel, ENSAIA - INRA, France, and Ganlin Zhang, Institute of Soil Science, Chinese Academy of Science, China. After Essen, Nancy, Cairo and Nanjing the Working Group will have its 5th conference in New-York from September 21-25, 2009 (see more: www.nycsxcd.net/suitma-2009). The Paddy Soils Working Group is arranging a symposium on Paddy Soils: Better Performances for Human and Ecosystem Health at the 9th Int. Conf. East and Southeast Asian Federation of Soil Science, October 27-30, 2009, Seoul, Korea (www.esafs9korea.org).

The Forest Soils Working Group has planned to hold the next major International Symposium on Forest Soils together with the Institute of Applied Ecology of Chinese Academy of Sciences (CAS) in Shengyang City, China in about August / September 2012.

From the commissions and divisions several requests were received regarding

- Direct availability of a web page and communication platform in the IUSS
- Model for conference announcements within the IUSS, incl. registration, application of abstracts, full papers
- Access to the national Soil Science Societies and their commissions, working groups, etc., for linkages of different levels
- List of News, Bulletins, etc. of national Soil Science Societies and responsible persons
- The process of election of officers through the national societies. It seems that many members of various national soil science societies were unaware of the election and had not been contacted by their society officers. This should be clarified for the future. Similarly for soil scientists in the CGIAR centres, who are not affiliated with any national soil science society are left out.

By the election in 2008 the IUSS officers for the period 2010-2004 are already nominated. We want to congratulate them for their success. The early nomination has the advantage that a liaison can develop between the generations of IUSS officers and cooperation between new officers can start earlier. This activity has already commenced.

Wolfgang Burghardt, Germany

Mike McLaughlin, Australia

Division 4

The objectives of Division 4 of IUSS are (i) to provide soil science input in policy-related topics addressing environmental and social concerns, (ii) to provide the soil science input in the decision-making process and (iii) to address special issues that will be brought to the attention of the IUSS, especially in relation with the human and socio-economic use of the soils. The Five Commissions within Division 4 are addressing issues related to Division 4 objectives within the framework of: (i) Soils and the Environment (Commission 4.1); Soils, Food Security and Human Health (Commission 4.2); Soils and Land Use Change (Commission 4.3); Soil Education and Public Awareness (Commission 4.4) and History, Philosophy and Sociology of Soil Science (Commission 4.5).

Commission 4.1 collaborated with both Commissions 4.2 and 4.3 to present joint symposia at the quadrennial conference of the combined Australian and New Zealand Societies of Soil Science in Palmerston North during December 2008. This conference also received official recognition as being part on the International Year of Planet Earth. Major themes at this conference included (1) The Water Crisis, (2) Confronting Salinity, (3) Soil Acidification, (4) Valuing Natural Capital, (5) Sustaining Soil Biological Health and Function, (6) Soils and the Carbon Economy, and (7) Integrated Environmental Management. In particular, collaboration among these three IUSS Commissions in Division 4 at the are addressing the themes of Environment and Land-Use Change and The Environment and Human Health. The symposium on Environment and Land-use Change focused on the impacts of land use change and land use intensification on soil functioning, and on the quantity and quality of receiving aquatic environments that are supplied by water that is first filtered by the soil. In this joint symposium there were 16 papers. The symposium on The Environment & Human Health focused on the role of soils in the filtering and buffering of emerging contaminants which include endocrine disruptors, microbes, pharmaceuticals, personal care products, and the recently added class of emerging contaminants of nano-materials. In this joint symposium there were 8 oral presentations, along with 4 posters.

The Chair of Commission 4.2, Dr C Rice represented IUSS at the ICSU-Workshop on Urban Health and


Well-Being Vienna, Austria with support from the U.S. National Committee for Soil Science. The aims and goals of the ICSU Science for the Health and Well Being Initiative are to: (1) Demonstrate the extent to which a range of science and technology is important to health and well-being, (2) Educate (at multiple levels) about science and technology using modern means of communication, (3) Collaborate to identify areas unmet and produce new ideas, science and technology partnerships to look to the future, and (4) Develop an inventory of ongoing programmes, and activities to identify unmet needs.

The Chair and Vice Chair of Commission 4.4, Dr R Weil and Dr P Drohan along with fellow members of the Soil Science Society of America (SSSA), were involved in the establishment of the Smithsonian Institution's wonderful soil exhibit in Washington DC, USA <https://www.soils.org/smithsonian/>. Congratulations to the SSSA for such an outstanding achievement.

Division 4 is establishing an initiative on Rare and Threatened Soils led by Dr P Drohan, Vice-Chair of Commission 4.4. Additional information is available in the following article: Drohan, P.J. and T.J. Farnham (2006). A proposal for the formal designation of rare and threatened soils. *Soil Science Society of America Journal* 70: 2086-2096.

A School project about soil was initiated for middle high school students in 2008 in collaboration with Commission 4.4. The pilot program will commence in June 2009 with six high schools in Western Australia. Participating schools will register on an interactive website, teachers will participate in a specially designed professional development program through the SPICE Program at The University of Western Australia, and soil scientists will support the schools as 'Soil Science Mentors'. The website will explain the program with additional information about soil. The project, now called '*Monitoring Soil Science*', will be a longitudinal study supporting student projects about soil, land management and climate change. Resources for teachers are being prepared and the program will be open to other schools via the website in 2010.

Commission 4.5 is preparing a new book, '*Soil and Culture*', edited by Dr E Landa and Dr C Feller (Chair and Vice Chair of Commission 4.5) to be published by Springer in time for the 19th World Congress of Soil Science in Brisbane, Australia. The book looks at



the vast scope of human interactions with soil, and depictions of soil in art, literature and film.

Commission 4.5 has continued to maintain its very informative Newsletter edited by Dr E Brevik with the most recent edition published in January 2009. The newsletter has been jointly published since its inception with SSSA Committee 205.1 and can be viewed on the IUSS website.

Commission 4.5 co-sponsored a history session at the 2008 SSSA-GSA meeting in Houston. The session topic, Historical Links between Soil Science and Geology, was directly linked to this first-time joint meeting between these organisations. Other sponsors were the SSSA History Committee and two GSA divisions. Dr E Landa was the co-organizer of this session. Dr C Feller and Dr E Landa also represented IUSS at the International Year of Planet Earth symposium held in Orleans, France in November 2008 with presentations on Soil Science and Culture. The papers from the November 2008 session at SSSA-GSA meeting will be published (2010) as a thematic issue of the journal 'Physics and Chemistry of the Earth'.

Lyn Abbott, Australia



29th General Assembly of ICSU

Roger Swift (President) and Stephen Nortcliff (Secretary General) attended the 29th General Assembly of the International Council for Science (ICSU) in Maputo Mozambique in October 2008. Prior to this meeting the GeoUnions of ICSU held their own meeting to discuss both matters at the forthcoming General Assembly of ICSU and matters of concern to the GeoUnions.

GeoUnions Meeting Sunday 19th October 2008

Following discussion at the ICSU General Assembly in Rio in 2002, the GeoUnions (initially IUSS, IGU (international Geographical Union), IUGG (International Union of Geodesy and Geophysics) and IUGS (International Union of Geological Sciences)) decided that there was benefit in meeting as a group to discuss matters of common interest across the broad area of GeoScience/Earth Science. We first met in Paris in 2004 prior to the InterCongress meeting of ICSU Unions and have subsequently met prior to ICSU meetings (both General Assembly and Union Meetings) and occasionally at other times. There are now eight members of this grouping with IAU (International Astronomical Union), ISPRS (International Society for Photogrammetry and Remote Sensing), URSI (International Union of Radio Sciences) and INQUA (International Union for Quaternary Research) having joined.

The Unions communicate regularly about matters of common interest as well as discussing matters directly related to ICSU. At the Business Meeting held in Maputo the opportunity was available for Unions to report on their activities since their previous meeting in Paris (February, 2008). The main focus areas on Natural and Human-induced Hazards, Health and Wellbeing, and GeoScience in Africa were reviewed. A number of the GeoUnions are actively involved in the International Year of Planet Earth and a brief progress report was presented together with a fuller report on activities in Africa by Sospeter Muhongo (head of the ICSU Regional Office in Africa), who also reports on the ICSU Africa Region scientific initiatives. The main items discussed were


the plans by ICSU for programmes on Hazards, Ecosystems and Health and Wellbeing, the proposals on data management and policy, and more general matters relating to ICSU's links with its Unions and the Unions' links with the recently established Regional Offices of ICSU (based in South Africa, Malaysia and Brazil). Nominations for the ICSU Officers were also discussed.

Science in Africa Monday 20th October

This day jointly organised by the Association of Scientific Investigation in Mozambique and the Africa Regional Office of ICSU was a combination of presentations about scientific progress and needs from a national and regional political perspective and a series of reports on specific scientific issues in the region. The meeting was well attended by a wide range of representatives from the political and scientific spheres of both Mozambique and Africa in general and there was active participation in wide ranging discussions. In addition to specific discussions on scientific areas there was also discussion on how to ensure that the potential of the region was achieved through the provision of appropriate and accessible educational systems. In the days prior to the main meeting there had been a series of meetings in the regions of Mozambique and a most interesting paper presented the problems faced in these regions and the contributions science should make to providing appropriate solutions. This was a long and diverse day with the underpinning message that the scientific foundation in both education and research is an essential prerequisite to successful development within the region.

ICSU Union Members Forum Tuesday October 21st

The membership of ICSU consists of National Members (National Academies) and Scientific Unions. In recent General Assemblies prior to the main meeting these two groups have met separately to receive reports and discuss items which will be



presented on the agenda of the General Assembly. Whilst welcoming the opportunity to discuss topics in more detail, the GeoUnions have suggested on more than one occasion that there should be more opportunity for discussion between these two broad membership groups. There is a feeling amongst the GeoUnions that this separation may actually inhibit the smooth running of ICSU because it seems that neither of the groupings fully understand the backgrounds to the viewpoints of the other and in the General Assembly there is rarely time to provide this background information when raising a point in discussion. These reservations apart the day was a useful exercise in which a number of key topics were discussed. These included some of the new interdisciplinary initiatives; the Hazards Planning Group report was outlined by H. Gupta (IUGG Vice-President); the report on Ecosystems Services was presented by the ICSU Executive Director, Thomas Rosswall; the report on the proposals to manage world data was presented by B. Minster who is chair of the Panel of World Data Centers (ISRIC is such a Centre). Thomas Rosswall presented the broad conclusions of a draft report on the involvement of the Unions within ICSU. This report highlighted that the Unions, and in particular the GeoUnions, are very active in their involvement with ICSU, although some Unions believe this involvement in terms of submission of nominations and comments on ICSU documents is not always reflected in the composition of Committees and other ad hoc activities proposed by ICSU. The Directors of the Regional Offices presented reports of their activities and made a repeat request for the Unions to ensure that they identified representatives from the Unions in the three regions (Africa, Asia and the Pacific) and Latin America and the Caribbean) to work with the Regional Offices.


ICSU 29th General Assembly October 21st to 24th

The Opening Ceremony of the 29th General Assembly was held in the presence of the President of Mozambique on the evening of 21st October and was followed by a Dinner hosted by the President.

The main business of the General Assembly began on October 22nd. Following the formalities of confirmation of the Minutes, Report of the ICSU Secretary General and the reporting back from the National Members Forum and Union Members Forum, Thomas Rosswall presented a progress report on the ICSU Strategic Plan 2006-2011 (www.icsu.org/i_icsuinscience/INIT.html).

A number of items outlined in the Strategic Plan were then presented. These included a full report on the Progress of the International Polar Year. A report on the scoping study from the ICSU Planning Group on Natural and Human Induced Environmental Hazards and Disaster was presented and following discussion it was recommended that a new interdisciplinary programme be established within ICSU entitled *Integrated Research on Disaster Risk* (IRDR). Recommendations for membership of the Scientific Committee of this programme must be presented to the ICSU Executive Board as soon as possible. A report was presented on *Ecosystem Change and Human Wellbeing*. This report was a development from the Millennium Ecosystem Assessment seeking to identify the gaps and priorities for future action. The GA agreed to establish a 10 year programme as an Interdisciplinary body of ICSU, with a Scientific Committee to be nominated by the National Members and Unions. This programme, in addition to ICSU, will involve UNESCO and UNU, being hosted by the latter in Germany. A brief outline of a further initiative on Health and Well-being in the Changing Urban Environment was presented. The GA recommend that the Executive Board continue to pursue investigations in this area and if appropriate develop an interdisciplinary programme in this area.

A significant part of the GA programme was devoted to reviews of the activities under the broad heading of the *Global Environmental Change Programmes*. These were the Earth System Science Partnership (ESSP), the International Human Dimension Programme on Global Environmental Change (IHDP), the International Geosphere-Biosphere Programme (IGBP) and the World Climate Research Programme. The reports provided a wealth of information and illustrated the cross-disciplinary nature of many of the programmes. SCOPE (the Scientific Committee on Problems of the Environment), established in 1969, has been long recognised as an interdisciplinary body within ICSU. ICSU through CSPR has raised concerns about the effectiveness of SCOPE and recently commissioned an independent review which was tabled. In the light of this review the recommendation from the Executive Board was that SCOPE cease to be an interdisciplinary body over the next two years. SCOPE representatives provided a very strong counter argument to the EB's recommendation and a lively discussion followed. The recommendation of the EB was carried although there was a sizeable number of votes supporting SCOPE from both Unions and National Members.



ICSU has acted as a focus for campaigns highlighting freedom and responsibility in science through its Committee on Freedom and Responsibility in the Conduct of Science (CFRS). The Committee reported recent progress and identified priorities for the future. Within ICSU there has been a strong case made in recent years for the need to work with Social Scientists (the IHDP interdisciplinary programme is an example of this). ICSU continues to work with the International Social Science Council (ISSC) in seeking to encourage scientists and social scientists to work together.

The discussions on the quality, storage and access to scientific data raised in the Union Members Forum were further debated in the GA, which resolved to establish an ICSU World Data System as an Interdisciplinary Body to replace the World Data Centers and the Federation of Astronomical and Geophysical Data Services and working with CODATA to establish an ad hoc Strategic Coordinating Committee for Information and Data.

Considerations for the future included discussions about the deliberations of the CSPR and EB concerning the strategic planning for the future in particular the development of the Strategic Plan for 2012-2017. The GA recommended that full plans be brought to the 30th GA in 2011.

The accounts and future strategy in relation to membership dues were discussed in detail. ICSU as is the case with many of the Unions finds that the majority of its funding arises from a very small number of countries with a differential in excess of 200 between the smallest contributor and the largest contributor. A number of ways in which these discrepancies might be addressed were discussed. Also discussed was the idea of voting being related to the fees contributed, not on a linear scale, but in terms of bands with for example 4 votes, 3 votes, 2 votes, 1 vote for broad bands of contributions. No final decision was taken on this.

Elections for Officers and the Executive Board took place during the GA. The President Elect from 2011 to 2014 will Yuan T. Lee (China – Taipei) winner of the 1986 Nobel Prize for Chemistry. The elected Vice Presidents of ICSU were K. Reivio (Finland) and R. Kuroda (Japan). The new Secretary General is M. Tchunte (Cameroon) and H. Ott (Switzerland) the Treasurer. The GeoUnions representative on the Executive Board continues to be Uri Shamir from IUGG.

Stephen Nortcliff,
Secretary General
Reading, November 2008

IUSS Alerts November 2008 – April 2009

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 November 2008 and April 2009.

Soil on the *Nature* cover



There are no weekly soil science articles published in the top journals. The 30th October issue of the international weekly journal of science, *Nature*, has a soil profile on the cover and two articles on what presumably are paleosols. The *Nature* cover shows a soil pit

from Western Thailand, where the different layers have been deposited during the 2004 and past tsunamis that took place in the fourteenth and fifteenth century. Similar observations have been made in Aceh, Indonesia, where the 2004 sand sheets were preceded by the deposits of three tsunamis from the past 1200 years. The Thailand and Indonesia findings suggest that the 2004 tsunamis is neither the first nor the last of its kind.

Soil Flyers



The year 2008 is over and 2009 has just started. First of all, may it be a healthy and prosperous year for all of you! Although the world slipped in some sort of economic valley in 2008, the year has been a good one for soil science. Many new international projects have started, over 18,000 soil publications have been published, the appreciation for soils and our discipline is much on the rise, and so are job vacancies and student numbers – all indicators of the vigour of soil science. The world seems to refocus on real things that really matter and on real matters, including the soil. In 2008 the IUSS has stimulated and promoted soil science across the globe; one of the efforts has been an A4 flyer that briefly highlights the importance of soils. The flyer

has been translated in Bahasa, Italian, Chinese, Japanese, Danish, Korean, Polish, Finnish, Russian, French, Spanish, Greek, Thai, Hungarian, and Turkish. They are all as PDFs on www.iuss.org and can be freely downloaded. Although the survival of our discipline depends on imagination and great new scientific development, it is with these flyers that we can educate and generate interest into the natural resource on which so much depends: the soil. Use them, and have a Happy 2009!

Alfred Hartemink

Deputy Secretary-General IUSS

New Pedometron



A new issue of *Pedometron* has been published in December. The chair of the Pedometrics commission, Murray Lark, notes that 2008 was a year with two centenaries: W.S. Gosset's paper on the probable error of a mean, and F. Haber's discovery of the nitrogen reduction to ammonia.

There are reports from the Third Global Workshop on Digital Soil Mapping in Utah and from EuroSoil in Vienna. The Newsletter contains interesting articles on boundaries in linear relationships, on experiments using data-mining techniques for digital soil mapping, and the origin of the soil formation equation by Alex McBratney and Budiman Minasny. Three books are reviewed and the best paper for 2007 is announced. There are details on the new IUSS working group on proximal soil sensing, and there is the pedometrician and non-pedometrician profile.

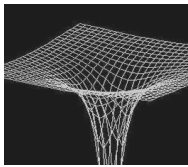
The Newsletter can be downloaded at www.iuss.org and on www.pedometrics.org

Online directory of soil science groups



An on-line directory is available named 'geographical directory of soil-science research laboratories in the world'. The directory lists 218 laboratories in 43 countries (laboratory means research institution, department, group, cluster etc.) The main features are: Good coverage of laboratories for western Europe, USA, Canada, Australia and New Zealand; Designed with students and young researchers in mind; may be useful for associations looking for a 'local' soil science 'referee', or for soil scientists in need for a large database of laboratories; Extensive use of Google tools: Maps, Earth, Documents. (+ off-line scripting with R language); Available in various format that makes it easy to export in another 'system' (basic CSV file, KMZ, HTML/Bookmark). It is also available in French and has been prepared by Julien Moeys and for more information: julienmoeys.free.fr/?geolabosoil or mail julienmoeys@yahoo.fr

Videos on missions in space-time



Nature Video presents five short films on the future of physics. Recorded at the 2008 Nobel Laureate Meeting in Lindau, these films capture the conversations between young researchers and physics Laureates George Smoot, William Phillips, John Hall, David Gross and Gerardus 't Hooft. They grapple with universal ideas including dark matter, dark energy, the Large Hadron Collider, space-time and quantum computing. Visit www.nature.com/video/lindau/index.html to see these videos.

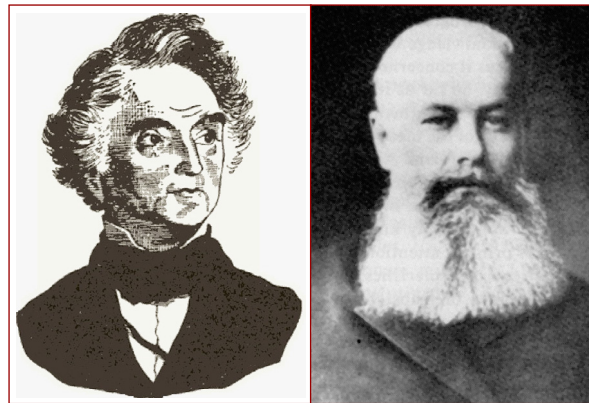
New Newsletter



This issue of the newsletter contains exciting information from the first ever joint meeting of the Soil Science Society of America and the Geological Society of America! This was a particularly exciting meeting for those of us in the soil science community who straddle the line between

geology and soil science. It also celebrates the life of Roy Simonson, a great soil scientist who passed away in 2008. Additional information includes happenings at the German Society of Soil Science, information on new opportunities to publish, and lists of new books and journal articles that came out recently. I hope everyone finds something of interest in this issue! Any and all submissions for future newsletters are welcomed! These may include short articles, book reviews, and news items. Please send such materials to Eric Brevik at Eric.Brevik@dsu.nodak.edu

Call for nominations: Dokuchaev and von Liebig Award



Two awards are presented by IUSS at each World Congress of Soil Science (WCSS) to recognize outstanding contributions in two specific areas:

- *IUSS-Dokuchaev Award* for basic research in soil sciences
 - *IUSS-Liebig Award* for applied research in soil sciences
- These two awards are differentiated by the type of contribution rendered, not by professional membership grouping. Eligible are members of the International Union of Soil Sciences. Only one award can be given to one person during one year. Further information please contact Winfried Blum at herma.exner@boku.ac.at

GlobalSoilMap.net – a new digital soil map of the world



GlobalSoilMap.net is a new global project that aims to make a new digital soil map of the world using state-of-the-art and emerging technologies for soil mapping and predicting soil properties. It was launched in New

York in February. The new digital map will consist of primary functional soil properties at a grid resolution of 90 by 90 m. It will be freely available, web-accessible and widely distributed. *GlobalSoilMap.net* was initiated by the IUSS Working Group on Digital Soil Mapping in 2006. The consortium, which is led by ISRIC - World Soil Information (Wageningen, Netherlands), includes the Joint Research Centre of the European Commission (Ispra, Italy), the Commonwealth Scientific and Industrial Research Organization (Canberra, Australia), the University of Sydney (Sydney, Australia), the Chinese Academy of Sciences (Nanjing, China), the Earth Institute at Columbia University (New York, USA), the US Department of Agriculture - Natural Resources Conservation Service (Morgantown, USA), IRD (Montpellier, France), the Brazilian Agricultural Research Corporation (Embrapa, Rio de Janeiro) and CIAT-TSBF (Nairobi, Kenya). For more information visit www.globalsoilmap.net which also has a press release.

Innovative Earth-Related Learning Ideas



Earth Learning Idea (ELI) was developed as an internet-based support network for teacher trainers and teachers of earth science across the globe, by providing educational resources that will promote interactive teaching and the development of investigational and thinking skills, whilst provoking educational debate - minimizing costs by using voluntary effort and commitment wherever practicable. ELI was established in 2007 as a run-up to the International Year of Planet Earth (IYPE) with its primary activity in the 2008 IYPE. By early November their website had over 8500 visits from 115 countries. The response was so encouraging that ELI will continue the project into 2009. See the Earth Learning Idea website at www.earthlearningidea.com

What is a soil (in French)



Institut de recherche pour le développement

We are pleased to announce that a presentation of the soil research programmes run by the IRD (*Institut de Recherche pour le Développement*) is now available on-line: www.iuss.org/IUSS DG-SDG positions.pdf

It is part of a series of thematic presentations entitled 'Suds en ligne', devoted to the IRD's research programmes. This presentation has been awarded the

'International Year of Planet Earth' label, in recognition of the scientific value of the soil studies undertaken by IRD towards the sustainable development of our planet.

32,000 pages of soil science unearthed



All proceedings of 18 World Congresses (1927-2006) have been scanned and are available as PDF on the IUSS website (under World Soil Congresses). So that means that you now have full access to all articles published in these proceedings. Each volume is one PDF – some are rather large (500 Mb) and may take some time download but it gives you access to hundreds of articles. You can search through a PDF with the <CTRL F> command and type your keyword or author name or any combination. Ideally, each paper is added to the large international literature databases and we welcome all suggestions how that should be materialized and financed.

New Pedomtron



A new issue of Pedomtron has been published in March. The newsletter contains information on the Richard Webster Medal, *GlobalSoilMap.net*, a report from the national scale soil monitoring workshop, and a couple of articles that make you think (Why indicator kriging should be abandoned; Preparing developing-country students for pedometrics; Alex's most preferred pedometrics paper; Spatial coverage sampling on various spatial scales; Mapping research hot-spots using citation rate and Google geocoding service; Pedomathemagica) and there is the pedometrician (Dick Brus) and non-pedometrician (Johannes Lehmann) profile.

The Newsletter can be downloaded on www.iuss.org and on www.pedometrics.org

All Landsat data in the USGS archive now free



Landsat sensors record reflected and emitted energy from Earth in various wavelengths of the electromagnetic spectrum. Landsats 5 and 7 'see' and record blue, green, and red light

in the visible spectrum as well as near-infrared, mid-infrared, and thermal-infrared light that human eyes cannot perceive. Landsat records this information digitally and it is downlinked to ground stations, processed, and stored in a data archive. It is this digital information that makes remotely sensed data invaluable. Landsat data have been used to monitor water quality, glacier recession, sea ice movement, invasive species encroachment, coral reef health, land use change, deforestation rates and population growth. Landsat has also helped to assess damage from natural disasters such as fires, floods, and tsunamis, and subsequently, plan disaster relief and flood control programs. The Landsat data in the USGS can now be freely downloaded, visit <http://glovis.usgs.gov>

A global site



The **Earth Portal** is a comprehensive resource for timely, objective, science-based information about the environment. It is a means for the global scientific community to come together to produce the first free, expert-driven, massively scaleable information resource on the environment, and to engage civil society in a public dialogue on the role of environmental issues in human affairs. It contains no commercial advertising and reaches a large global audience. The Earth Portal has three components: (i) The *Encyclopedia of Earth* with over 3,500 articles, is produced and reviewed by 1,000 scholars from 60 countries; (ii) The **Earth Forum** provides commentary from scholars and discussions with the general public, (iii) The **Earth News** offers news stories on environmental issues drawn from many sources.



Emerging Global Trends Provide New Opportunities in Soil And Water Conservation

Julian Dumanski
Ottawa, Canada

Progressively, the geopolitics of soil and water conservation are shifting from agriculture, forestry, and other extractive services, to provision of environmental goods and services and global life support systems. The links among human welfare, ecosystem integrity, and land degradation are increasingly being realized, but the major policy decisions on control and mitigation are being made by urban people who are well meaning, but generally not highly knowledgeable on the tradeoffs possible to provide for an improved environment.

Global Trends Influencing the Agenda for Soil and Water Conservation

Climate change is one of the major global driving forces with potential to significantly impact our approaches to soil and water conservation (global agricultural GDP is projected to decrease by 16 % by 2020 due to climate change). The influence of this, however, is compounded by several social and economic driving forces that result from our continual initiatives for improved incomes and lifestyles. The current global recession is a direct consequence of the globalization of international markets, and may ultimately have some impacts on soil conservation policies. However, the consequences have yet to be sorted out.

The more important of the global driving forces are the following:

Increasing Human Footprint on the Environment

The human footprint on global terrestrial ecosystems is very large and growing exponentially. Currently, fully 83% of the world's land area is directly influenced by human interventions, and


estimates are that by early in the next century, all land will be under some degree of management. This very extensive footprint originates as we continually expand our economic influence on the landscape. However, the results are of lower resilience than the environmental goods and services provided by nature, and the consequences are often land degradation, desertification, poverty, and increasing marginalization of the world's disadvantaged. Soil conservationists have a responsibility to explain the impacts of these human interventions on future human welfare, environmental services, and human health.

Urbanization

Urbanization of global populations is increasing dramatically; sixty one per cent of global populations are expected to live in urban areas within the next three decades. The impacts of this are two fold. Firstly, cities and towns are the main consumers of most ecosystem services, and thus the ecological human footprints will increase dramatically as incomes and consumption increase. Secondly, the choices and actions of urban dwellers are more powerful than those of rural populations, and future political discussions on the environment will be increasingly controlled by these urban influences, including decisions on soil and water conservation. Soil conservationists must be ready to play increasingly important roles in these strategic discussions.

Globalization

Globalization is a relatively recent phenomenon but one with potentially significant impacts on soil and water conservation policies. This is because of the new driving forces on the use and consumption of natural resources, namely income growth, high energy prices, rapidly escalating food prices, emerging biofuel markets, and climate change. These dramatic changes are due to a series of interrelated factors, including increased global populations (expected to increase a



further 30%), high economic growth, particularly in China, India, and Brazil, shifting rural-urban populations, growth of the middle class with higher incomes and changing consumption habits, reduced cereal stocks, the search for alternate fuels, and climate change. Related to this is the growing power and leverage of international corporations on the production and marketing chain, including the horizontal consolidation that has occurred across the agri-input industry, with the top three agri-chemical companies accounting for roughly half of the total market. The concentration of marketing power in the hands of international corporations is not likely to benefit soil conservation since these companies emphasize food quality, food safety, and guaranteed supply at the required time, rather than global environmental benefits. However, they may be useful partners in promoting certification schemes for soil conservation. Regardless, the soil conservation community must recognize that there are new players on the field and that they wield considerable consumer and political power.

Information Power

The age of information and the age of globalization are parallel driving forces, but whereas the latter is driven by trade, the former is driven by new technologies and the evolution of new and improved skills and understanding. In contrast to the past, where nation states derived individual national policies on issues such as the environment, the evolving approaches are to move toward integrated, international solutions on global environmental problems. This is best illustrated by the growing influences of the international environmental conventions, administered by the United Nations. These are increasingly powerful instruments, with highly effective convening powers, centered primarily on the urban constituency. For example, in 2007, the Intergovernmental Panel on Climate Change shared the Nobel Prize with Al Gore for their work on climate change. This was achieved through the collaboration of hundreds of scientists from many countries in the space of only about 15 years. Such impact has never been achieved before.

Emerging Opportunities and Next Steps

There are new driving forces that will influence the geopolitical agenda for soil and water conservation. These include climate change, but also the rising consumerism in the global middle classes, including

the rapidly urbanizing populations of China, India, and Latin America. The processes of globalization, modern technologies of knowledge management, and the rising influence of urbanites have the potential to considerably change the way we promote soil conservation. Also, there are new and increasingly powerful players on the soil conservation scene, including the nature-based nongovernmental organizations that are emerging as influential players in soil conservation. We must be cognizant of these driving forces and react to capture the opportunities they present.

There are many promising, new opportunities for soil conservation, as illustrated in the international environment conventions, the evolving, new programs under sustainable land management, and the evolving international environmental trading schemes. Benefiting from these opportunities will require some shifts in focus for the soil conservation community, a move from defining the processes of erosion and developing technological fixes, toward more involvement in the social and political processes of community led soil conservation, and removing the barriers and bottlenecks to soil conservation. In particular, the soil conservation community must be more proactive in mobilizing and empowering the farmers and herders of society in the fight against land degradation, since they are the immediate direct beneficiaries of improved land management and those who suffer the most from land degradation. The international environment conventions provide guidance and opportunities for such shifts, and some successes achieved with international institutions provide guidance on approaches.

The world has changed, and the science of soil and water conservation must also change. The soil conservation community must stop looking at what has worked in the past, but look forward to what is needed in the future. It must move from perennial studies of erosion and prescriptive engineering approaches to more holistic and participatory (social) approaches. It must move to procedures which integrate soil conservation, rural landscape management, and technological innovation, with profit generating activities and market opportunities. We must get on board with the new driving forces and new program opportunities; we must catch the wave.

This article is a summary of the original published in the JSWC 2009 64(1):11A-14A. It derives from the keynote paper given at the XVII meeting of the Brazilian Society for Soil and Water Conservation and Management, 10 - 15 August, 2008, Rio de Janeiro

European Confederation of Soil Science Societies

Soil is a vital, non-renewable resource that provides essential goods and services to human life and ecosystem by playing a major role in climate change, food, fiber and energy supply, carbon storage, water regulation, biodiversity, geological, geomorphological and archaeological heritage, and human health. Thus, it is essential to maintain and preserve the soil functions for the sustainable development of human society. The sustainable use, the preservation and the sustainable restoration of the capacity of soil to perform as many as possible of the above environmental, economic, social, scientific and cultural functions of soil is thus essential to human and ecosystem life.

The European Confederation of Soil Science Societies (ECSSS) was founded in the year 2004 with the objectives 'to foster collaboration and cooperation amongst the National Societies of Soil Science in Europe and amongst European soil scientists in all branches of the soil sciences and their applications, and to give support to the above in the pursuit of their activities' (Article A2 of ECSSS Statutes). The activities of ECSSS include (from Article A4 of ECSSS Statutes): (a) the facilitation of the organization of meetings and conferences, principally the EUROSIL Congress every four years; (b) the promotion of the dissemination of material relevant to the interest of ECSSS; (c) the establishment of cooperation with other related organizations in Europe; (d) the representation of Soil Science to a wide European audience; (e) the identification of priority areas at the national and international levels for soil protection and preservation in Europe; (f) the undertaking of any action that can advance the impact of Soil Science in Europe. The supreme body of ECSSS is the Council, which consists of the President, the Vice-President and one accredited representative from each Full Member Society, and has the general responsibility for the efficient functioning and the success of the Confederation, discusses and develops strategy and activities of ECSSS and solicit and select the countries and venues of the EUROSIL Congresses, which is the main event of ECSSS and covers all Soil Science disciplines.

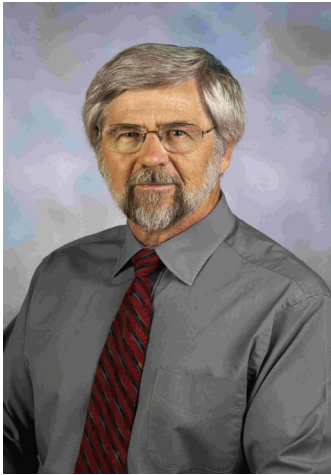


Long-term soil sustainability is endangered by numerous threats that have been listed in the proposal of a European Directive for soil protection. To address and prevent soil degradation processes that significantly adversely affect the capacity of soil to perform its several functions, measures need to be established for the restoration and remediation, including mitigation, of degraded soils to a level of functionality consistent at least with its current and approved future use. To this regard, a motion has been produced during the last EUROSIL Congress held in Vienna in October 2008 to support the EU Framework Directive on soil, which focuses on the need to have a unique legal and political framework for soil protection and preservation at the European level.

President: Prof. Dr. Nicola Senesi
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Five questions to a soil scientist

Five questions to Gary Peterson



Gary A. 'Pete' Peterson

Age: 69

Position: Professor and Head Soil and Crop Sciences
Department Colorado State University

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E-mail: gary.peterson@colostate.edu

1. When did you decide to study soil science?

I majored in chemistry for the first 3 years after entering university, primarily because of an interest that developed in my later high school years. My chemistry interest remained, but I struggled with what I wanted to do with it. Academic counselors suggested I consider applying my chemistry interest to the field of agriculture. One of the first classes I enrolled in was 'Introductory Soil Science' taught by a master teacher, Professor Robert A. Olson. The subject matter was fascinating to me, and the following semester I requested that Prof. Olson be assigned as my academic advisor. In addition, he hired me as an undergraduate student assistant in his research laboratory, which put me in contact with his graduate student group. Following these experiences my career choice was easy; soil science and in particular soil fertility management. The change from Chemistry major to Soil Science (in an Agronomy Dept.) cost me an additional year of time to complete my B.S. degree, but it was well worth the time!

2. Who has been your most influential teacher?

Without a doubt, Professor Robert A. Olson at the University of Nebraska (now deceased). Two other persons also have greatly influenced my career; Dr. John Pesek at Iowa State University (my Ph.D. advisor) and Prof. Charles A. Fenster at the University of Nebraska (my unofficial mentor during my first academic position at Nebraska)

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

The most exciting fact about soil science, to me, is how soil functions are so tightly linked to the sustainability of earth's life systems. This realization has grown as my career has matured; it was not as apparent to me when I started in my career.

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

'Hands on' experiences are the best stimulus for teenagers. The trick is finding the correct venues for the experiences. In Colorado we do not have a good way to do this at present.

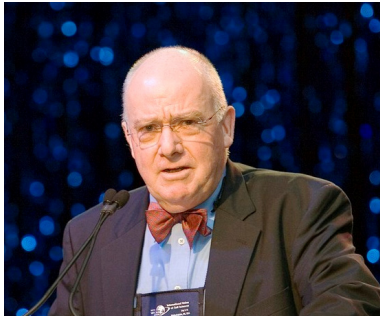
For college students, work experiences in research laboratories and field projects are very effective. Over my career some of my best graduate students who pursued careers in Soil Science started as undergraduate research assistants. Their interest is piqued as their eyes are opened to the applicability of our science to the solution of agricultural and environmental problems in a real world setting.

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

We need to focus our attention on young people beginning at the grade school level. Our professional societies must lead these efforts, but individuals need to act locally to make it actually happen. National level efforts like the Smithsonian exhibition, 'Dig It – The Secrets of Soil', sponsored by the Soil Science Society of America, are excellent platforms from which to launch our programs. However, the follow up must be at the local level. We must also find ways to get soil science classes inserted into other curricula at our universities. This will require improved communication on a department to department basis, and I dare say on

a professor to professor basis. As soil scientists we should be actively campaigning with our university colleagues about the value of placing their students in soil science classes.

Five questions to Winfried E.H. Blum



Age: 67

Position: Professor of Soil Science and Director of the Institute of Soil Research
Department of Forest and Soil Sciences
University of Natural Resources and Applied Life Sciences (BOKU), Vienna,

Address: Peter Jordan Str. 82, 1190 Vienna

E-mail: winfried.blum@boku.ac.at

1. When did you decide to study soil science?

I became interested in soils long before I started my first university studies in forest engineering, in 1960, because during high-school, I assisted in field investigations for forest site classification in southern Germany.

In my second year at Freiburg University, I had basic courses and field training in soil science and became even more interested in this topic. After my final exam in this subject, in 1962, I was asked if I would like to start a PhD thesis on the genesis of soils on limestone in the southern Rhine Valley. I agreed, and started in parallel new studies in analytical chemistry, geology, mineralogy, crystallography and botany (plant sociology and physiology), in order to broaden my knowledge base for soil research. – In 1965, I finished my Master in forest engineering, in 1968 my PhD in natural sciences, with a thesis in soil science. In 1971, I concluded my habilitation (Dr.rer.nat.habil.) in soil science.

2. Who has been your most influential teacher?

In the first place, this was Professor Robert Ganssen at Freiburg University, who wrote the first book on soil geography in German language, which had a

very wide distribution among geographers and which was also translated into other languages.

After the conclusion of my first studies, I received a special scholarship, which allowed me to study soil science in Nancy, France, with Professor Philippe Duchaufour, at his Centre of Biological Soil Science of the CNRS and at the Nancy University. Both teachers were most influential, the first one on my interest in soil genesis and geography, and the second one with regard to the ecology of soils.

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

The most exciting and challenging aspect of soil science is the complexity of soils, which is like a scientific puzzle and requires a broad basis in sciences. This complexity is not only inherent in the genesis of soils, but also in their functions for human society and the environment. As Secretary-General of ISSS/IUSS for 12 years, I had the chance to travel in many parts of the world and to experience the complexity of soil systems, due to the very different soil forming factors.


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

As a student at Freiburg University, I taught soil science to high-school pupils of different ages, with the experience that the easiest way to stimulate young people is to explain them the important functions of soil for humans and the environment and how intensively human life is linked to soil.

During my time as university teacher, each year I invited high-school students of different ages to come to my laboratories and to study soil through the microscope and through simple physical and chemical experiments, which they found fascinating, e.g. watching the behaviour of biota in soils through the microscope, or to measure carbonates, pH and other soil characteristics. Here, the most important thing was not to look only at soil from a distance, but to take soil into one's hands and to study it at close range.

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

As a realist and an optimist, I am convinced that soil science will become more important in the medium to long term, because the demands on soil will strongly increase, from the production of food, feed and fibre, to biofuel and other goods and services, including its role in global atmospheric cycling, e.g. greenhouse gas emissions and carbon storage. This prevision is based on different current



developments: for example the still ongoing increase of the world population (about 85 millions per year), the move of about 1 billion people from rural to urban areas during the next decade, leaving behind subsistence agriculture and local food production, thus putting pressure on the local, regional and international food food markets, the exponentially increasing demand for grain for producing animal protein in some parts of the world, and finally the constant loss of fertile land through sealing, for the development of physical/technical infrastructures, such as housing, industrial production, transport ways and others. Currently, Europe alone loses about 10 km² of soil and land per day. Under these circumstances, the remaining soil has to be used in a more knowledgeable way ('knowledge-based bio-economy'), in which soil science should and will play a dominant role.



Favourite Soil Science Books

The favourite books of Thorsten Behrens

Recommending soil science books is a non-trivial task and is depending on the audience. Many important, interesting and beautiful books are already recommended ranging from groundbreaking ones such as Jenny's book on soil forming factors, books focussing on specific techniques like Webster and Oliver's 'Statistical methods in soil and land resource survey', to general soil science text books such as the 'Handbook of Soil Science'. We can no longer ask Hans van Baren of ISRIC who reviewed 598 soil science books between 1999 and 2007.

Three of my favourite books I would recommend to students interested in modern (spatial) soil science research such as pedometrics, soil geography, digital soil mapping, pedology and soil sensing are:

- Guidelines for Surveying Soil and Land Resources by McKenzie, Grundy, Webster and Ringrose-Voase (2008, CSIRO Publishing).
- Soil Geomorphology - an Integration of Pedology and Geomorphology by Gerrard (1992, Chapman & Hall)
- Principals of Geographical Information Systems by Burrough and McDonnell (1998, Oxford University Press)

'Guidelines for Surveying Soil and Land Resources' is an amazing collection of knowledge promoting important and modern methods and standards for soil surveys. Even though it is focussing on soil and land resource surveys in Australia most concepts are rather universal. 'Soil Geomorphology - an Integration of Pedology and Geomorphology' provides a detailed discussion of soil formation in relation to relief, which, to my point of view, is of great importance for understanding and mapping soils in space. 'Principals of Geographical Information Systems' is one of the best books currently available on the topic of GIS. It presents a strong theoretical basis and thus provides one of the most important prerequisites needed for pedometrical research.

The favourite books of Mike Vepraskas


These three books are my favorite soil science texts. My research and teaching interests deal with pedology and soil physics, and these books reflect those topics.

1. Brewer, R. 1964. Fabric and mineral analysis of soils. Wiley & Sons, Inc., New York. 470 p.

This book is the most important text on how soil morphology should be described and quantified, at both the macroscopic and microscopic levels. It also lays out methods for calculating volume changes to soil components that occur from weathering. This is the one book that has had the greatest impact on my career, and the careers of those who have taught me. I was introduced to it during my M.S. research, used it again for my Ph.D. research, and continue to refer to it in research conducted over the last 30 years. It is the only soils text I am aware of where people from around the world have literally memorized its definitions and concepts for soil components. This book should be considered one of the classic texts in soil science. Although not an easy book to read, nor an ideal text for teaching classes on micromorphology, it is an indispensable reference source for pedologists and soil physicists. It should be consulted by anyone dealing with soil solids, pores, soil structure, and soil formation. More recent texts are available from other authors, but they build upon the concepts presented here, and so I feel Brewer's book should never be forgotten.

2. Russell, E.W. 1973. Soil conditions and plant growth. 10th ed. Longman, London. 849 p.

This comprehensive text on soil science was a family affair, with ten editions written by father and/or son, beginning with the first edition published in 1912. I was told to read this book, cover to cover, by my Ph.D. advisor in order to prepare for my preliminary exams. I thought at first he was crazy because the book is over 4 cm thick. Paging through it now, I see from the underlined sections that I did make it through most of the text. The book has remained one of my favorite soil science texts for two reasons. First, the writing is very clear, with terms and



concepts carefully defined and illustrated. Second, the literature discussed is not necessarily extensive, and is dated now, but the examples were chosen carefully to make their points. I still find the discussions in this book to be clearer than those found in more recent texts.

3. Holtz, R.D. and W.D. Kovacs. 1981. An introduction to geotechnical engineering. Prentice-Hall, Inc., Englewood Cliffs, NJ. 733 p.

This text was written by engineers for an introductory course on soil mechanics. Of its 11 chapters, chapters 1 through 7 deal with soil and water topics that most soil scientists will recognize. The writing is straightforward and concepts clearly defined.

This is a favorite book of mine because I borrowed extensively from it when developing lectures for an undergraduate class on soil physics. In my opinion, every teacher of soil physics should read this book. It is unique in how it uses phase diagrams to solve problems related to masses and volumes of water, solids, and air. While authors of soil physics texts usually include a discussion of phase diagrams in their books, they seem to use the diagrams only as an illustration of soil components. Engineers on the other hand, use phase diagrams as a problem-solving tool. This was very useful to me in instructing my students (largely turf majors) in how to calculate bulk density, porosity, and water contents for various situations.

The favourite books of Florence Carre

Soil science gathers a lot of disciplines and provides many models dedicated to environmental solutions. It is then difficult to tackle very deeply all the disciplines and understand every model. The book 'Sols et Environnement. Cours et Etude de cas. Dunod, coll. Sciences Sup. 832 p (MC Girard, C. Walter, J. Berthelin, J.C. Remy, JL Morel, 2005)' is very interesting to read since it clarifies soil science basis, presents soil landscapes (particularly French ones, sorry for this bias) and provides methods for answering specific issues related to environmental problems. It allows for getting a first sight on a specific problem and for searching afterwards, other publications which are describing more deepen concepts and methodologies. This book is always on my desk. Thanks to all the contributors who did a


great job. Actually, most of them were my teachers- I can then put a face on their name and can hear them speaking. It is facilitating the learning!

To go deeper in the functioning of soil and particularly soil key properties like Soil Organic Carbon and Nitrogen and their relations with global environment, I particularly recommend the book 'Carbon and Nitrogen in the Terrestrial Environment. Kluwer Academic Publishers Springer, 432 p.' (R. Nieder and D.K. Benbi, 2008). This book is clear, the carbon and nitrogen cycles are well explained, and at the same time it goes deepens in relations between environment and soil functions without forgetting global change issues. It presents models for estimating green house gases fluxes with their plus and minus. It provides then a good overview of the different impacts of environmental compartments on soil carbon decrease, nitrogen release. This is nowadays for me, an unavoidable book.

The third book I have in mind is also recent and more related to my daily work. It is the 'Guidelines for Surveying Soil and Land Resources, 2nd Edition. CSIRO Publishing.557 p. (N.J. McKenzie, M.J. Grundy, R. Webster, A.J. Ringrose-Voase, 2008)'. This book is very complete in the domain of Soil Survey and Land Resources Assessment. All the steps of soil surveying are present. Moreover, this book stresses the fact that quantitative assessment of soil properties and deriving environmental issues is now necessary and affordable by people working in this domain. The tools are then described but also their way of provision, the quantitative models for soil mapping, land evaluation and land management. Of course, the authors did not forget a section dedicated to communication. Although communication is necessary to describe, it is seldom explained. I then particularly appreciate it here. I encourage all the people working in this domain to read this wonderful book.

The favourite books of Murray Lark

It is ironic, given his reputation as a scourge of religion, that I approached Richard Dawkins to tell him that I wished to abandon Zoology for Soil Science, with feelings one might ascribe to the eldest son of a staunchly protestant family informing the patriarch that he has signed up as a Jesuit. Dawkins was then my tutor at New College, Oxford, he was notoriously disdainful of applied science in general and agricultural sciences in particular. But I



had just read the first book on my list: *The Soil Under Shifting Cultivation* by Peter Nye and Dennis Greenland. The book approached the practical problems of shifting cultivation in fundamental terms. How short can the cultivation cycle be if the system is to be sustainable? Nye and Greenland assembled data from trials in forests across the tropics, but this was not a prelude to a rather dull exercise in data mining. Rather they used the data to put reasonable bounds on parameters for a first-order model of soil carbon. Having estimated these, they could explore a range of situations, showing how short the cycle could be before a long-term decline in fertility and stability would set in; rigorous concepts, mathematics and real problems. I knew then that soils science was for me! If I had to convince an eager school-leaver that his or her mathematical and scientific skills could be applied to problems both intellectually satisfying and important to their fellow humans, then I would give them this book.

The second book is Duchaufour's *Pedology*. I read Duchaufour in the summer vacation at the end of my second year. By then my head was buzzing with information about the soil. What Duchaufour offers is a system for this information. The book begins with an account of soil-forming processes and their function in the environment. Out of this emerges the concept of zonal and intrazonal soils, and so the final chapters on the classes in Duchaufour's system. Again, the strength of this book is its conceptual approach. It would make excellent emergency treatment for a student whose passion for soil science is suffocating through enforced study of *Soil Taxonomy*.

These two books made me a soil scientist. The last one made me a pedometrician.

I arrived at university with an enthusiasm for statistics. None of the recommended texts gave quite the insight of Richard Webster's *Quantitative and Numerical Methods in Soil Classification and Survey*. Despite the specialist title this sets out the principles of design-based statistics, with a bit more detail on multivariate methods, and a tantalizing half page on geostatistics, which Webster had only recently encountered when the book was published in 1977. I have recommended this book to students on introductory statistics courses, and those who need to get to grips with multivariate methods. In fact I nearly lost my copy when I lent it to a student who was puzzled by principal components. A second edition was published in 1990, with Margaret Oliver

as coauthor: *Statistical Methods in Soil and Land Resource Survey*. It is a scandal that it is no longer available. Reprinting it would save us from much wasted effort through badly-designed sampling or unthinking use of statistical packages.

Honors and Awards

IFA Award – Andre Bationo



The International Fertilizer Industry Association (IFA) announces the winner of the 2009 IFA International Crop Nutrition Award : Dr André Bationo is the Director of the West Africa program of the Alliance for a Green Revolution in Africa (AGRA) , based in Accra, Ghana, and Senior Program Officer of AGRA's Soil Health Program. This award recognizes his contribution to soil fertility research and development in Sub-Saharan Africa and, in particular, his efforts to promote research in the field of efficient, balanced and environment-friendly fertilization.

André Bationo's research has shown that nitrogen (N) and phosphorus (P) are the most limiting nutrients in the Sudano-Sahelian zone of Africa and that fertilizer use efficiency in this region can be improved through proper placement and combination with organic inputs. Technologies on the use of rock phosphate crop residues and cattle manure have also resulted in improved crop yield, soil fertility and reduced cost of production among smallholder farmers in the Sudano-Sahelian zone. He

has contributed to about 300 scientific scientific publications. In collaboration with researchers at the International Crop Research Institute for the Semi-Arid Tropics (ICRISAT), the International Center for Soil Fertility and Agricultural Development (IFDC) and universities, André Bationo pioneered the development of the fertilizer microdose technology in West Africa to reduce the risk of crop failure. Farmers adopting this technology have been able to record yield increases of 50 to 100 per cent. In Niger, for example, 5,000 farm households in twenty pilot sites adopted fertilizer microdosing in just three years. The technology has subsequently been adopted in Mali, Burkina Faso, Senegal and many more other African countries.

In an effort to link farmers to markets, André Bationo's research has also encouraged the adoption of the Inventory Credit System (ICS) and a revolving fund to remove the barriers to the adoption of soil fertility restoration technologies. The combination of the appropriate localized soil fertility improvement technologies, post-harvest credit and storage of grain as collateral ('warrantage'), enabling farmers to sell crops later in the season for higher prices and higher profits, has helped farmers in Niger produce 50 per cent more food, increase their farm incomes while protecting their natural resources.

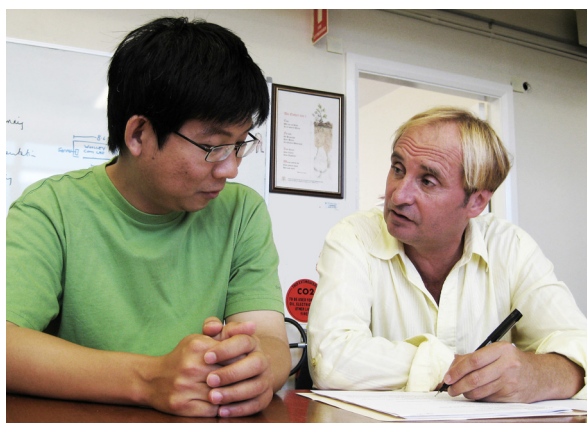
André Bationo has integrated both on-station and on-farm research using participatory approaches to ensure that new technologies suit the socio-economic and biophysical conditions in which farmers live and work. His most recent focus has been on Integrated Soil Fertility Management (ISFM), in particular on the development and refinement of soil fertility improvement technologies involving the use of inorganic fertilizers, animal manures, grain legumes, agroforestry options, integrated nutrient management options, and soil, water and nutrient conservation.

Dr Bationo is the 18th recipient of the Award, but the first African. He was nominated by Industries Chimiques du Sénégal (ICS) . He graduated from Laval University in Canada with a PhD in Soil Chemistry and has then been involved in research and programme management for the past 25 years. His last two positions were at the Tropical Soil

Biology and Fertility Institute of the International Center for Tropical Agriculture (TSBF-CIAT) in Nairobi, Kenya as Coordinator of the African Network for Soil Biology and Fertility (AfNet), and previously at IFDC in Niamey, Niger working in joint IFDC-ICRISAT research projects.

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 farmers in the form of practical recommendations.

Taylor Medal Alex McBratney and Budiman Minasny



The JK Taylor Gold medal in Soil Science was awarded by the Australian Society of Soil Science to University of Sydney scientists Alex McBratney, Professor of Soil Science, and ARC Queen Elizabeth II Fellow Budiman Minasny. During 2006-2008 they co-authored 24 papers in international journals and 4 book chapters in the following soil science concepts. Since 1999 (with 41 published papers together) they have a total of 351 citations, and an average of 9.2 citations per paper.

Digital soil mapping

Digital soil mapping is the creation of a spatial soil information system using field and laboratory observation methods coupled with quantitative spatial prediction techniques. This is the fastest growing area in soil resource management. They have developed novel techniques for mapping soil organic carbon stocks and profile distribution in the Lower Namoi Valley, and are lead authors for two chapters in the revised 'Australian Soil and Land Survey Handbook' by CSIRO Land and Water.

Modelling soil formation

The authors have taken soil formation processes to the next level: quantitative mechanistic modelling. The authors devised a mechanistic model to study the formation of soil in the landscape and identified major processes in a continuity equation to model soil thickness as a function of bedrock weathering and erosion processes. This model was able to simulate soil development in a landscape realistically, and has been applied to predict the spatial distribution of soil in a complex agricultural landscape at fine spatial and temporal scales. The authors also have created a soil profile model that considers the weathering of parent materials with physical, chemical, and biological processes and leads to the creation of soil horizons.

Soil inference systems


The authors established empirical models to predict soil hydraulic properties for Australian soil using easy to measure soil properties. These include prediction of water retention and bulk density. They have pioneered the concept of soil inference systems which endeavours to build a soil expert system inferring soil properties with minimal uncertainties by means of logically linked predictive functions. They also showed that the infrared diffuse reflectance spectrum of soil can be used as an input and as a complement to a soil inference system.

IPNI Science Award John Ryan



The International Plant Nutrition Institute (IPNI) has named Dr. John Ryan of the International Center for Agricultural Research in Dry Areas (ICARDA) as the winner of the 2008 IPNI Science Award. Dr. Ryan is Soil Fertility Specialist/Principal Scientist/Consultant, located at Aleppo, Syria. He receives a special plaque plus a monetary award of US\$ 5,000.

'We are honored to announce John Ryan as the recipient of the IPNI Science Award. He is a truly outstanding scientist and most deserving of this recognition. His distinguished career has included teaching, research, extension, and service. And Dr.



Ryan has been prolific in the number of quality publications he has authored, co-authored, contributed to, or edited,' said Dr. Terry L. Roberts, President of IPNI. 'Dr. Ryan has worked on five continents during his career and has bridged the gap between the developed and undeveloped world.'

Dr. Roberts also acknowledged the other outstanding nominees for the award, and encouraged future nominations of qualified scientists. Private or public sector agronomists, soil scientists, and crop scientists from all countries are eligible for nomination. This is only the second year the IPNI Science Award has been presented. The previous recipient in 2007 was Dr. M.S. Aulakh of India.

Born in Tipperary, Ireland, from a farming background, Dr. Ryan earned his B. Agr. Sc. in 1967 at University College Dublin. Dr. Ryan subsequently received his Ph.D. in Soil Science at University College Dublin/National University of Ireland, in 1971. Later, while serving as a post-doctoral researcher in soil science in the Soil and Water Science Department as a Fulbright Scholar at the University of Arizona, he earned his M.S. in Agricultural Education. In 1999, he was awarded the Doctor of Science (D.Sc.) degree by University College Dublin based on significant published work. Before joining ICARDA, Dr. Ryan was Soil Fertility Specialist/Professor of Agronomy with the University of Nebraska, working with the USAID/MIAC-Maroc Project based at Aridoculture Center, Settati, Morocco, from 1987 to 1992. From 1975 to 1986, he was Professor of Soil Science at the Faculty of Agricultural and Food Sciences, American University of Beirut, in Beirut, Lebanon.

At ICARDA, Dr. Ryan's innovative strategic research (soil fertility/ agronomy/ crop nutrition) has involved wheat, barley, chickpea, lentil, vetch, and medics, focusing on sustainability in long-term cropping systems in rotation trials. Other crop-focused concerns include water and nutrient use efficiency, supplemental irrigation, wastewater use, and conservation tillage. His work on efficient fertilizer use for the past three decades has been a factor in the 10- to 20-fold increases in regional fertilizer use. Dr. Ryan's other significant contributions include increasing awareness of micronutrients for crop growth and nutritional quality in Middle Eastern soils and demonstration of the potential of legume-based, cereal rotations to sequester carbon and improve soil quality and crop water use efficiency. While his work is directly related to the Mediterranean, it has

implications outside the region. His innovative research has led to publication of more than 165 journal articles, 16 books, 25 chapters, 24 internal articles, 48 conference proceedings, 170 abstracts, and 30 reports.

During his career, Dr. Ryan has served on editorial boards of three international journals and four regional journals. He is a member of the American Society of Agronomy (serving as Chair of its International Division), the Soil Science Society of America, the Crop Science Society of America, the International Union of Soil Scientists (serving as Chair of its Soil Fertility and Plant Nutrition Division, 2002-2010), and the Soil and Plant Analysis Council. He served on the World Phosphate Industry's Scientific Advisory Committee (1997-2007) and is involved in several scientific networks.

Dr. Ryan is a Fellow of the American Society of Agronomy (1998) and the Soil Science of America (1999). He received the International Soil Science Award (1997), the International Service in Agronomy Award (2004), and the International Service in Crop Science Award (2008), being the only scientist from the CGIAR to receive all three international awards from the Tri-Societies. In 2007, he received the Soil Science Distinguished Service Award from Soil Science Society of America, and the Benton Jones Award from the Soil and Plant Analysis Council from North America. He was also the recipient of the prestigious International Crop Nutrition Award from the International Fertilizer Industry Association (IFA) in 2006, and was accorded the 'Distinguished Citizen Award' from the University of Arizona (2000). In recognition of his lifetime services to international soil science, Dr. Ryan was recently announced as Honorary Member of the International Union of Soil Scientists (2008); the Award will be presented at the IUSS World Congress in Brisbane, Australia in 2010. The IPNI Science Award is intended to recognize outstanding achievements in research, extension, or education, with focus on efficient and effective management of plant nutrients and their positive interaction in fully integrated crop production that enhances yield potential. Such systems improve net returns, lower unit costs of production, and maintain or improve environmental quality. The recipient is selected by a committee of noted international authorities.

Obituaries

Hans van Baren

1936-2009

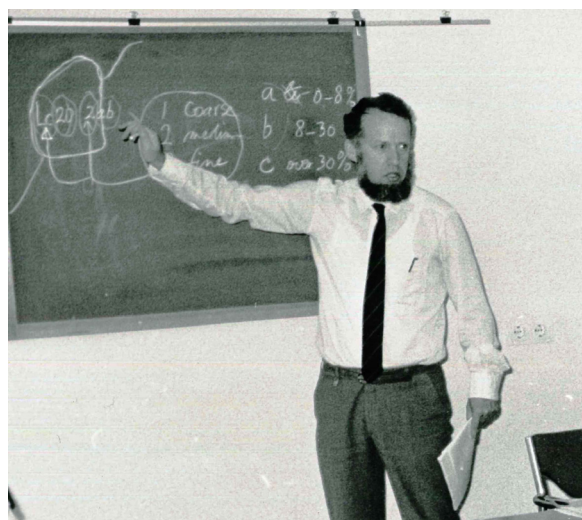
Deputy Secretary General IUSS 1990 - 2002
Book Review Editor ISSS/IUSS 1970 - 2008
IUSS Honorary Member 2006

Drs J.H.V. (Hans) van Baren passed away on 27th January 2009. Hans van Baren has been a long-term officer and first class leader in the ISSS and IUSS, has made major contributions to the Soil Map of the World and has been instrumental in the establishment and development of the unique World Soil Museum (ISRIC) in Wageningen.

Hans was born in The Hague, but his formative years were spent in Utrecht. Hans studied geology at the University of Utrecht and followed courses in Wageningen under the guidance of Professor C.H. Edelman. After his graduation, he took the initiative to establish contact with UNESCO, which at that time had a system whereby young scientists were recruited to work in UNESCO projects around the world. With the support of his uncle, Professor F.A. van Baren, Hans went to Paris where he was offered employment. Based in Rome he assisted with the major task to compile the FAO-Unesco Soil Map of the World. This was a key challenge and its completion in the mid 1970s is by many regarded as an important milestone in soil science.



Hans with his uncle Prof. F.A. van Baren and aunt in Utrecht, late 1960s



Hans teaching about the FAO-Unesco legend in 1984

After three years working in the FAO-UNESCO Soil Resources Office, Hans went for FAO to East Pakistan (Bangladesh) where he conducted soil surveys. This posting lasted for two years after which he was sent to Kenya to assist with the development of the national soil survey institute. With his Dutch colleagues, the first soil reconnaissance of the whole country was made followed by detailed mapping of areas of high agricultural potential.

With the experience gained in Rome, Bangladesh and Kenya, Hans was offered a post in the International Soil Museum (ISM, now ISRIC - World Soil Information), which at that time had only recently been set up by the ISSS. Together with his colleagues, he set about collecting and preparing soil monoliths of different soils according to the classification of the FAO-UNESCO Soil Map of the World. These monoliths were the foundation of the unique ISRIC collection of today. He was acting director of the ISM from 1975 to 1978 and deputy director from 1978 to his retirement of ISRIC in 1997.

The transfer of the International Soil Museum from Utrecht to Wageningen took place in 1978. A sectional building, specially designed for ISM, was constructed containing a lecture room, an exhibition hall (World Soil Museum), offices for staff and laboratories for soil monolith preparation and soil



Hans at his ISRIC desk in 2000, reviewing books, servicing IUSS members.

analysis. Under the guidance of Hans the Museum expanded and fulfilled an important role in the exhibition of soils of the world, and the world of the soils. He was much involved in the collection and classification of the soil monoliths.

He started the book review section of the ISSS Bulletin in the early 1970s. Each year the number of reviews grew and in the 1990s Hans reviewed 100 to 150 books annually for the Bulletin. Many readers of the Bulletins have indicated that they found the book review section the most useful and informative part of the Bulletin. In 1990, he was elected Deputy Secretary General of the ISSS and became heavily involved in the day-to-day management of the society including its transformation to a union (IUSS). He has been supportive for national soil science societies, particularly in developing



Hans and the mayor of Wageningen on 20th November 2008, knighted Ridder in de Orde van Oranje-Nassau

countries and maintained a wide global network of soil scientists. In 2002, he officially retired from his Deputy Secretary General post of the IUSS but he continued to review books for the IUSS Bulletin until 2008. He was made IUSS honorary member in 2006.

Hans was also active in museums and social projects in Wageningen and was knighted (*Ridder in de Orde van Oranje-Nassau*) for all his activities in November 2008. By that time a brain tumour had already been found and he was to start chemo- and radiation therapy. Two months after his knighthood, he passed away. Hans was a modest man, with great humour, insight, work ethics, networking abilities and interests in the world around him. He was a friend of the soil, but most of all a caring and dedicated friend for those who knew him. A friend forever has died.

Roel Oldeman

1942-2008

Dr ir L.R. (Roel) Oldeman suddenly passed away on 24th November 2008. Roel was born on 16th June, 1942, in Bandung, West Java, Indonesia. In 1968 he graduated from Wageningen Agricultural University and went to Hawaii for his PhD study on sugarcane: 'Analysis of Sugarcane Production in Relation to Climate, Soils, and Management'. From 1972 to 1980 he worked as agroclimatologist at the Central Research Institute for Food Crops (CRIFCI) in Bogor, Indonesia, in the framework of a bilateral agricultural assistance programme between Indonesia and the Netherlands. His research activities focused on the relationship between climate and rice-based-cropping systems. From 1980 to 1982 Roel worked as guest researcher at International Institute for Land Reclamation and Improvement (ILRI), Wageningen, the Netherlands. There he wrote the technical report 'A Study of the Agroclimatology of the Humid Tropics of Southeast Asia', at the request of the Interagency Group (FAO, UNESCO, WMO) on Agricultural Biometeorology. Roel was a visiting scientist at the International Rice Research Institute (IRRI), Los Baños, Philippines from 1982 to 1985, where he was a Project Manager of a joint IRRI-WMO Rice-Weather Studies program. Since the mid 1980s until his retirement in 2002 he worked at ISRIC, Wageningen, The Netherlands. First as senior scientist and as part of his duties he worked for 12 months on the agroecological



characterization of Madagascar in the framework of a Rice Research and Training Project of the International Rice Research Institute (IRRI). From 1987 to 1990 Roel was the Project manager of a joint UNEP-ISRIC project: World Map on the Status of Human-Induced Soil Degradation (GLASOD, published in 1990). That map has been widely used and was his masterpiece.

From 1992 to 2002, he was the director of ISRIC and responsible for the management of ISRIC with the following mandate: The collection and dissemination of scientific knowledge of the soils of the world aimed at a better understanding of their characterization, classification, distribution, and capability for sustained land use at local, national, and global scale.

After his retirement, he worked as volunteer for the Openluchtmuseum (Open Air Museum) in Arnhem. Roel had a sudden stroke on the 22nd November 2008 and passed away two days later. He will be remembered as a highly amiable and open-minded person, who always was good company, and inseparable from his pipe. He is survived by his wife Henneke and daughter Mariëtte.



SO LONG, ROEL

When Henneke Oldeman called me in November last year to say that Roel had been taken to hospital, her voice told me that something was very wrong. It was indeed. That Saturday morning he had taken some pot plants to a glasshouse for storage during winter. When he came back, he looked tired and his speech was impeded. Henneke called the family doctor who diagnosed a brain haemorrhage and called an ambulance. Too much fuzz, (typically) according to Roel. He climbed on the stretcher himself, under protest. In hospital he slid in a coma from which he never awoke.

I have known Roel Oldeman for some 40 odd years. We both entered Wageningen University in 1960 to study soils. After his study he went to Hawaii where he got his PhD; I went to Turkey and from there to Indonesia. It was a pleasant surprise when one day we received message that Dr Oldeman would join the project. He and Henneke were very much at ease in Indonesia. Socially very active, great organizers, and indefatigable. There is still an international school in Bogor that they helped set up. They stayed on for some 8 years and then moved to IRRI in the Philippines. From there they went back to Wageningen. Roel became a staff member of ISRIC and later its director. They bought a house in Oosterbeek near Wageningen where they became the hard core of the 'Bogor Group', friends who worked in Indonesia in the 1960's and 1970's and shared common memories and experiences.

Roel Oldeman was a pleasantly steady person. In all those years I have never seen him angry or bitter. He had a positive attitude; I think that he saw the relativity of it all. He was a family man and 'the best grandfather on the planet' in the words of his son-in-law. And he was a great friend.

If there is justice and a heaven, which I ardently hope, I expect to meet him there. He'll probably sit on the terrace. 'Heineken, Dries?' Yes, my friend. Silly? Perhaps, but what a great prospect!

Paul Driessen

A. J. (Tony) Smyth

1927 - 2008

After taking a degree in geology at the University of Cambridge, Tony was recruited by the U.K. Colonial Research Service in 1952 to carry out soil surveys of the cocoa-growing areas of Western Nigeria. Newly-married, he and his wife Joyce lived at several stations in the bush, where there were few modern comforts, but the work was interesting and a constant challenge. Eventually, Tony was made Director of Soil Survey at Moor Plantation, Ibadan. 'The Soils and Land use of Western Nigeria' by Smyth and Montgomery (1962) is a classic of its kind which Tony later expanded into an FAO bulletin on cocoa soils. Tony had a talent for making information available in a simple format, as was illustrated by his West Nigerian soil classification disc.



Though grounded as a desk officer when he joined FAO in 1962, Rome was a better place for a young family than living in the bush. He travelled widely visiting FAO projects and attending international meetings. He was always ready to support staff in the field, both with his practical and pragmatic advice and with his administrative experience. In the early seventies, he led the move from diverse, local, land suitability classifications to the globally-applicable 'Framework for Land Evaluation', which became one of the most widely used FAO manuals. After 12 happy years in Rome, Tony moved to London in 1974 when he was appointed Director of the then Land Resources Development Centre which already had a well-established reputation for its

Land Resource Studies. Under Tony's direction, further expansion of staffing took place so that, by 1984, professional staff of LRDC numbered more than 60. However, more difficult and frustrating times followed as government cut back its research establishments. Tony retired in 1987, after which he served on the board of IBSRAM (the International Board for Soil Research and Management) for five years, which enabled him to sustain his interest in soil and land evaluation and to maintain contacts with international colleagues and friends.

Tony Smyth will be remembered as an excellent colleague and as a sociable person with a great sense of humour and a sardonic wit that could puncture holes in the pompous. He is survived by his wife, Joyce, and two adult children. Tony and Joyce had celebrated their 56th wedding anniversary two weeks before Tony died on 15 August.

Hugh Brammer and John Coulter

Peter Alan Burrough

1944 - 2009

Many pedologists and geographers will know of Peter Burrough from his book *Principles of Geographical Information Systems for Land Resource Assessment* in which he described how to organize, analyse and present spatial data on soil and land. The first edition was the outcome of his experience in soil survey, landscape classification and quantitative pedology.

Peter Burrough took his first degree in chemistry at the University of Sussex. He won a scholarship to pursue research in organic chemistry at Oxford. Once there, however, he discovered that soil was more interesting, and he joined Philip Beckett's small band of heretics who were questioning the orthodoxy of soil survey and seeking to place survey and classification on a proper quantitative basis. He was awarded his doctorate for his contribution.

In the last year of his doctoral studies he was appointed junior lecturer in the university's Geography Department. There his interest in geography, a subject he had not studied at school, grew. He successfully applied to join the British Overseas Development Administration and was appointed to serve as soil surveyor in Sabah, Malaysia. In Sabah he maintained his interest in



Photo by Nicholas Burrough

statistical pedology while doing 'bread-and-butter' survey for rural development. He then spent three years as lecturer in geography and soil science in the University of New South Wales. It was barren time, with a heavy teaching load and no time for research. So in 1976 he moved to the Netherlands, initially in the Soil Survey Institute in Wageningen and later in Wageningen University where he threw himself into Dutch life and culture. There his research career took off. He developed computer-based methods for landscape classification and display, leading to numerous publications on a variety of topics including fractals, geostatistics, error propagation and fuzzy classification. In 1984 his prowess, achievement and enthusiasm were recognized by the University of Utrecht which appointed him as professor of physical geography and geographical information systems.

He finished his book in between these two jobs. The book was an instant success in a time that GIS was rapidly developing and there were no authoritative texts yet. Peter became a GIS celebrity and travelled the globe to give keynote addresses and to promote his work and that of his students. Although his interests widened to encompass topics well outside of soil science, he continued to publish in journals of soil science and may be regarded as one of the founders of the pedometrics community. The new methods from mathematics, statistics and computer science that he introduced to soil science have helped shape the way we do quantitative soil science today. The British Soil Science Society recognized this when it made him an honorary member in 2008.

Peter thrived in the dynamic environment at Utrecht University and loved teaching as much as research. Unfortunately in 2005 the university's shortage of money forced him into early retirement, but it gave him the opportunity to accept an honorary research professorship at Oxford University. Sadly, illness soon took hold and prevented him from implementing his plans for research, and he returned to the Netherlands in October 2008.

Many will remember Peter for his charismatic presentations and influential publications, but what characterized Peter most was his unbounded enthusiasm and excitement for research. While in charge of a large research group with many responsibilities, he would still find time to develop tools for spatial analysis for his students, to make new discoveries and to share these with whoever passed his room. It is his passion for science that we shall remember most.

Richard Webster and Gerard Heuvelink

Reports of meetings

A revolution in the use of soil information on a global scale!

The Launch of *GlobalSoilMap.net* – New York, 17th February 2009

After a long gestation period *GlobalSoilMap.net* was formally launched at Columbia University, New York on Tuesday 17th February 2009. The project is a global partnership of institutions: The Earth Institute at Columbia University, New York; ISRIC from Wageningen, AfricaSoils.net, CSIRO Australia, JRC (European Commission), The Chinese Academy of Sciences, NRCS (USA), TSBF-CIAT, EMBRAPA (Brazil), IRD (France) and the University of Sydney (Australia). The partnership seeks to produce a digital soil map of the world using state of the art technologies and where possible new and innovative technologies in the rapidly developing field of data transfer and communication, to enable information about soil on the ice-free part of the earth's surface to be readily accessible for use in a variety of contexts. This new approach will replace the eye-pleasing coloured soil

maps with which many of us are familiar, but often serve principally as colourful wall coverings in offices rather than being used to address soil related problems. Producing a soil map was often a top priority but often little thought was given to how to use the soil map once it was produced. Frequently there was only limited linkage between the original soil observations upon which the maps was based and other soil based information such as field trial data and other environmental information which had been gathered before or were gathered subsequently.

The aim of the project will be to map the ice-free land surface to provide a soil information system consisting of the primary functional soil properties at a grid resolution of 90m x 90m. Whilst this alone will be a major advance on our current available information it will be supplemented by interpretative and functionality options, using state of the art knowledge in Soil Science and other environmental spheres to provide a comprehensive system to support decision making on many of the issues faced in global, regional



and local development. With the rapid developments in the speed and accessibility of wireless communications and the development of low cost recording and retrieval systems this is aimed to be real time information! These digital soil maps offer the opportunity for information to be presented in the form it is most readily understood using colours and patterns. Information retrieval may be of only a small part of the data set, or may be of interpretations of soil and other environmental data for a specific purpose. The supporting material available in the project will provide the procedures for manipulation and combination of the range of data to generate a far greater set of information than is possible with a traditional soil map. As new requirements arise and new interpretations become possible as knowledge is gained these will be made available.

The first step in this global initiative, funded by the Bill and Melinda Gates Foundation to the sum of \$18 million, is to support the Alliance for a Green Revolution in Africa (AGRA) and partners from the programme to map the soils of sub-Saharan Africa. The work in Africa has created the Africa Soil Information Service. This first step recognises sub-Saharan Africa as probably the key area of the globe where the need to use all available soil data to optimise the use of soil and avoid catastrophes through mismanagement is of paramount importance. Using innovative technologies via satellite the project will create detailed images of large areas, indications of the nutrient status of soils, the available soil moisture and the levels of soil organic matter. These data will be collected together with climatic data and other environmental

information and made available via the internet. The programme also includes training for extension officers to enable them to use these data at a local scale making farmer relevant decisions and providing appropriate guidance. At a regional or national scale the data will enable more effective development planning by governments and where appropriate donors and investors. The provision of these data will enable farmers to maintain and improve sustainable food production in sub-Saharan Africa. This is particularly important as the climate shifts predicted for this region seem likely to be greater than for most other areas of the world and consequently will require more adjustment by farmers to maintain their production. With the newly available data these adjustments will be based on scientific knowledge.

The Project

To address the global targets of this programme the project has established continental nodes under the global co-ordination of Alfred Hartemink at ISRIC. The Nodes and responsible organisations are:

Sub-Saharan Africa:

- TSBF-CIAT, Kenya and the Earth Institute, Columbia University.

North America:

- NRCS, USA

Latin America and Caribbean:

- EMBRAPA, Brazil

Europe and Eurasia:

- JRC (EC), Italy

Oceania:

- CSIRO and University of Sydney, Australia.



Prof. Jeffrey Sachs addressing the GlobalSoilMap.net crowd



East Asia:

- Institute of Soil Science, Chinese Academy of Sciences, PR of China.

Further nodes are being developed in North Africa, West Asia and South Asia.

The Launch

The launch on 17th February 2009 took place in the Italian Theatre at Columbia University, New York on 17th February 2009, well attended by representative from the USA and across the rest of the globe, with IUSS represented by Stephen Nortcliff, and a strong delegation from South Korea. The formal opening was provided by Jeffrey Sachs, Director of the Earth Institute. Those of you who attended the WCSS in Philadelphia will have been inspired by the vision presented by Jeffrey Sachs for the key role soil science and knowledge of soils must play in global decision making. In his introductory comments here in New York, Jeffrey Sachs reiterated the critical importance of knowledge about soils in many issues facing the global community today; he identified this project as a major step towards the aim of ensuring that knowledge of soils is universally available and accessible to play this key role in addressing pressing global issues such as global food security, sustainable use of resources and responses to climate change. Jeffrey Sachs congratulated all of the team in establishing this project, but specifically Pedro Sanchez and Alfred Hartemink, for identifying this gap in information provision and working tirelessly over the past two years to move forwards to the point where this launch heralded the first significant step towards readily accessible soil data any where in the world.

The launch involved a series of illustrated presentations in person together with messages of support from Kofi Annan, Chairman, Alliance for a Green Revolution in Africa and Jacques Diouf, Director General, Food and Agriculture Organisation of the United Nations, on video or read on behalf of those unable to be present. The presentations highlighted both the general principles underlying the project and the particular regional focus and contributions from each of the Nodes. The afternoon began with a presentations on the potential use of digital soil data on aspects of sustainable development, focusing on Climate Change, Sustainable Land Use, Food Security and Soil Biodiversity. This was followed by a discussion between the audience and the panel. The final

session of the day presented viewpoints on the global impact of *GlobalSoilMap.net* from Zhongli Ding (Chinese Academy of Sciences), Paul Bertsch (Soil Science Society of America), Sveinn Runólfsson (Soil Conservation Service of Iceland – the first national soil conservation service) and Michael Golden (US Department of Agriculture- Natural Resources Conservation Service).

The day finished with a wine and cheese reception and the opportunity to reflect on the potential impact of this project, which takes the scientific and academic aspects of digital soil mapping, one of the newest and most rapidly growing parts of the Soil Science in the last decade, and applies the knowledge and approaches of this academic subject to the practical problems of soil management and soil use.

Stephen Nortcliff
Secretary General, IUSS

Annual Meeting of the Western Enviro-Agricultural Laboratory Association

Edmonton, Alberta, Canada

The Annual Meeting of the Western Enviro-Agricultural Laboratory Association (WEALA) was held at the Northern Forestry Centre, Canadian Forest Service, Natural Resources Canada, Edmonton, Alberta, Canada on April 1, 2009.

Plans are underway to hold a workshop in early 2010. We have organized annual workshops since the first workshop on soil sampling, quality assurance/quality control and laboratory accreditation in Lethbridge, Alberta in 1985. A recent workshop dealt with 'Advances in analytical technology'. It included a vendor show consisting of presentations and displays by instrument manufacturers and laboratory equipment suppliers (IUSS Bulletin No. 110, Page 59, 2007). Since the feedback from the participants indicated that this was an extremely useful workshop, we are planning to organize the 2010 workshop on the same theme. An Organizing Committee is working out further details.

An annual analytical round robin has been part of WEALA's activities since the founding of this Association. The results of a survey that I conducted when we formed this Association showed that this



was the primary impetus for most of the members to join the Association. Generation of high quality data has always been and remains the top priority. The round robin collaborative studies have enabled the laboratory to achieve this goal. At the Annual Meeting, a planning committee was formed to conduct the next round robin.

Charlene Rollheiser was elected President for 2009-2010. In the past, the address of the business office of WEALA would change whenever a Secretary-Treasurer was elected. It was decided that the business office should be located at one place. This provides continuity and ease of retrieving archival records. Joel Crumbaugh will continue to serve as Secretary-Treasurer and maintain all the records. Further information on WEALA can be obtained by contacting him (jcrumbau@nrcan.gc.ca). Visit us online at www.weala.com.

The WEALA is a non-profit association of analytical laboratories. The main objective of this 30-year old group is to generate high quality analytical results. The group provides a forum for developing standardized methodologies, discussions on laboratory management, and exchange of information on topics of mutual interest among analysts to improve laboratory operations. The Association was founded by Jim A. Carson, Ray Grimson, Yash P. Kalra, Don H. Laverty, and Al Rasmuson in 1979. I have had the privilege of participating in almost all the meetings and workshops and several round robins since the first meeting held in Calgary, Alberta on June 28, 1977 to discuss the feasibility of forming this Association. I have enjoyed serving as Secretary/Treasurer (1981-


82, 1985-86), Vice President (1982-1983, 1986-1987), and President (1983-1984, 1987-1988) of this Association.

Yash P. Kalra,
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Report on the 4th Australian and New Zealand joint soil science conference 'Soils 2008'

Massey University, Palmerston North, New Zealand

The 4th joint soil science conference of the Australian Society of Soil Science (ASSS) and the New Zealand Society of Soil Science (NZSSS) was held 1-5 December, 2008, at Massey University, Palmerston North, New Zealand. Approximately 335 registrants attended, the bulk from Australasia but others from the U.K., U.S.A., Brazil, Denmark, Kazakhstan, Japan and Taiwan also participated. Previous joint meetings of the two societies, held every four years, have been at Melbourne (1996), Lincoln University near Christchurch (2000), and Sydney (2004). The 2008 conference featured a slogan 'Soil - living skin of planet Earth' and was held as part of the 'International year of planet Earth' commemorations. The conference was organised largely along the usual lines: plenary sessions, theme sessions (symposia), and oral papers (189 in total) and poster papers (66 in total) were delivered in up to four concurrent sessions over a five-day period. Social events were a feature of the meeting and included an icebreaker session and evening meal to start the conference, a



steam-train trip and visit to a wind farm, the conference dinner and awards ceremony, a hangi (traditional Maori meal cooked underground), and a barbecue. Because larger-than-expected numbers attended the conference, the organisers, led extremely ably by Vince Neall of Massey University, were forced to run the plenary sessions at a separate campus in a building with sufficient seating to cope with the numbers. This meant that only two full plenary sessions were held during the conference, at the start and at the end, in this separate venue.

The theme sessions with invited speakers ran concurrently throughout the conference and in competition with concurrent sessions. I personally was a little disappointed by this (understandable) arrangement because all the thematic speakers had topical subjects that were of wide interest. Unfortunately it was not possible to attend all the thematic talks because of concomitant programme commitments. I would have preferred a full plenary session each day where the sense of community is fully realised together with the opportunity to hear a wide range of talks. The thematic topics and speakers/leaders were as follows: 1. The water crisis (theme speaker Neil McKenzie, CSIRO Land and Water, Canberra, ACT, Australia); 2. Confronting salinity (Kevin Goss, Future Farm Industries CRC, Western Australia); 3. Soil acidification (Bob White, Professor Emeritus, University of Melbourne, Australia); 4. Valuing natural capital (Brent Clothier, Plant & Food Research, Palmerston North, New Zealand); 5. Sustaining soil biological health and function (Richard Bardgett, Professor of Ecology, Lancaster University, United Kingdom); 6. Soils and the carbon economy (Stewart Ledgard, AgResearch, Hamilton, New Zealand); 7. Integrated environmental management including subthemes (a) plant nutrition, (b) soil quality, and (c) emission, runoff, leaching and mitigation (Dan Hillel, Columbia University, New York and Professor Emeritus, University of Massachusetts, Amherst, U.S.A.); and 8. Horizons for soil science in Australasia and Oceania soil science education: realising potential (theme facilitator Margaret Brown, AgResearch, Palmerston North, New Zealand).

The opening plenary speaker was Daniel Hillel who as always spoke eloquently and passionately on 'Homo et humus' to open the conference (although I must say I was very aware of much of the material he presented, and I even use some of his phrases in my lectures - properly cited of course!). The concluding plenary speaker was Paul Reynolds, Chief Executive of Ministry for the Environment of New

Zealand, who spoke on 'The importance of soils to New Zealand'. The talk was well organised and presented though I personally was a bit tired of the 'same old' message by this point. The annual N.H. Taylor Memorial Lecture of NZSSS, presented smoothly and engagingly during the final plenary session by Megan Balks (University of Waikato, Hamilton, New Zealand), was entitled 'Footprints at the ends of the Earth: impacts and management of human activities on frozen soils' and was very well received. The conference finished with an horizons education forum where the audience was challenged to come up with ideas to promote soil science and enhance its teaching. I was not sure where the discussion was leading and what the point was regarding any follow-up action plan (if there was one). I got the impression that by this time many in the audience were rather jaded but nevertheless I acknowledge of course the challenge is one that we need to confront and work at without let-up.

Several more thematic sessions were held. These included two joint IUSS commission sessions (of commissions 4.1, 4.2, and 4.3): 'The environment and land use' (chaired jointly by Brent Clothier, HortResearch, New Zealand, and Leo Condron, Lincoln University, New Zealand) and 'The environment and human health' (chaired jointly by Grant Northcott, HortResearch, New Zealand, and Chuck Rice, Kansas State University, U.S.A.). Three further thematic sessions were held on 'Techniques, applications and informatics', 'Soils, landscape development and dating', and 'Volcanic soils'.

A lot of excellent papers were presented during the conference, the award for the best being made to clay mineralogist-turned philosopher Jock Churchman on his masterly talk 'The (philosophical) status of soil science' during which Jock examined the roots of the discipline and the attributes that make it distinct and special. Other notable talks included Richard Bardgett's 'The consequences of soil biodiversity for ecosystem function'. (There were more but I cannot begin to list them!) Sessions on biochar and anything to do with carbon were very popular and usually audiences overflowed lecture rooms.

All conference participants received a spiral bound copy of the abstracts volume, a separate 'programme at-a-glance' booklet, and a memory stick containing all the abstracts. The abstracts, as seems to be the modern way (flawed in my view), were listed according to programme order with a cross referencing system to the theme session and day. It



Participants relaxing on the pre-conference 'Ashes and Issues' tour of North Island.

is not easy to find a specific author's abstract because the entire 5-day programme has to be scanned first to find the day and time of the author's talk and then that information is used to grind through the abstracts volume using the codes. Why not just list abstracts in alphabetical order of the first author (or provide an index)?

Six field trips were organised including a 3-day pre-conference trip 'Ashes and Issues' through northern and central North Island (led by David Lowe, Haydon Jones, and Paul McDaniel). This trip began in Auckland and concentrated on volcanic-ash derived soils, their age relationships and development through upbuilding pedogenesis, and current environmental management challenges associated with their use. There were 23 participants (including four students) on this tour, deriving from Japan, Taiwan, U.S.A., U.K., Australia, and New Zealand. The trip was blessed with exceptionally fine early summer weather. In preparing for the trip, I encountered for the first time a farmer who refused us access to a small quarry on his land despite a range of pleas and bribes, and another land owner took exception to our presence on a road, belonging jointly to eight residents, primarily because she had not personally been consulted (another owner had given me permission, I hasten to add). A 1-day post-conference trip from Palmerston North to Wellington along the southwest coast of North Island (led by Tessa Mills and Brent Clothier) examined peri-urban pressures, the viability of rural communities, and valuing natural capital. Four 1-day intra-

conference trips (free to all participants through their registration fees) covered a range of soils and land-use issues in the local area: (1) Intensification and diversification of land uses: economic and environmental trade-offs (led by Brent Clothier, Roger Parfitt and Alec Mackay); (2) Sustainable management of North Island soft-rock hill country (Grant Cooper and Alec Mackay); (3) The Manawatu sand country soil chronosequence (Vince Neall); and (4) Loess and volcanic soils of the Manawatu terrace-lands (Alan Palmer). I was forced to opt-out of my trip but heard generally favourable reports about the trips. The packed lunches were enormous.

The standards of catering and the catering staff were exemplary (apart from the 'coffee' which was a little below par I thought). Fantastic meals, both lunches and evening meals, as well as tea breaks were provided every day of the conference by the organisers. Such service helped to explain the rather daunting registration fees that exceeded \$900 NZD. The social events were friendly, the (free) train-trip being enjoyed by many. The conference dinner was notable in two ways: the longest set of awards ever made by ASSS and NZSSS in history, and a minor fracas. The patience and calmness of Vince Neall in controlling the evening were incredible.

A feature of the conference I found a little disappointing was that the poster papers were located well away from the area where the oral papers were presented. I felt posters had the usual and unwarranted 'lesser status'



Allan Hewitt makes a point

and when I visited the poster hall on several occasions I was almost alone. An incident occurred during one of our PhD student presentations. Some IT people appeared through a door alongside the student and began discussing in whispers some technical issue whilst the student was delivering her paper. I felt compelled to protest (the student was one of our Waikato group) but then desisted, such a protest probably being more disruptive in the end than the whispered conversation. On another occasion, another of our students, who shall remain nameless, accidentally banged the arm of Alex McBratney while entering the lecture room to see the talk by Alex (Alex had been waiting unseen behind the sole entrance door when the student entered). Unfortunately, to compound this first unavoidable error, the student in raising his arms to applaud the departing speaker, hit with his elbow a weird big red button that resulted in all the lights coming on and the data projector switching off (it was not able to be reactivated until later when it was more-or-less too late). Why would there be such a button in the middle of the seating in a lecture theatre?! As a result, Alex had to give much of his talk without his powerpoint slides. We apologise to Alex but point the finger of blame at Massey University's architect or handyman! Later, Alex (with co-author Budiman Minasny) was awarded the J.K. Taylor Gold Medal in Soil Science by the ASSS, which we hope made up for us

ruining his talk! Actually, I have a lot of time and praise for the IT coordinators, the minor 'whispering' blemish above being an exception. They handled all the heavy demands on them with patience and skill and I think deserved a huge amount of praise for helping towards the conference's great success.

One feature that worked well at the conference, despite my initial misgivings, was the free transport (bus pick-up) provided daily between the campus and accommodation for those participants who stayed in town.

Vince Neall and his team at Massey University deserve enormous credit for organising an excellent and friendly conference for us to enjoy and appreciate. My overseas colleagues and guests, and our Waikato University group, really enjoyed all aspects of the conference experience. For those who have never organised a conference, it is an extremely arduous and demanding exercise with no let up before or during the event, and the demands continue afterwards as well when there are accounts, taxes, reports and other gruelling aspects to finalise. We remain very grateful to all who contributed to the conference organisation, or who provided meals and other services or support, and who prepared presentations for our benefit.

I am convinced that the joint conferences of ASSS and NZSSS are extremely beneficial to both groups of soil scientists (and to those from elsewhere). As someone remarked to me, the feeling our group came away after 'Soils 2008' was one of mutual respect (always a good start) and a willingness to appreciate the different viewpoints and problems facing each country regarding soils and their use under increasing pressure, and to offer each other support and solutions through research, communication, and friendship. Rumour has it that the next meeting in 2012 may be held in Tasmania. Beforehand though the Australians have the severe challenge of organising and running the IUSS world soil congress in Brisbane in 2010. We in New Zealand wish them well and look forward to meeting up again with the Aussies, along with many other international scientists making the long trip downunder.

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International Meeting on Soil fertility Land Management and Agroclimatology

9 October - 1 November 2008. Kuşadası, Turkey

This international meeting was organized by Adnan Menderes University, Faculty of Agriculture, Department of Soil Science in collaboration with the *Soil Science Society of Turkey*, and *IUSS* in Kusadası-Aydın. It took place in the midst of a beautiful Aegean autumn and was attended by about 135, out of which 75 were foreign delegates. It was one of the low cost meetings in a world known touristic area. Kuşadası in Aydın province along the Aegean sea of Turkey is graced with abundant natural beauty, and history. Kuşadası is near the Ancient City of Ephesus, House of Virgin Mary, Artemis Temple and Basilica of St John, a thoroughly an excellent model to the Antic World in culture and art. The temple of Artemis is known as one of the Seven Wonders of the ancient world. Oral and poster papers were presented mainly on soil fertility, land management and the effects of climate change on soil and agriculture with the oral contributions from the esteemed international scientists. Important studies conducted by eminent researchers were also shared during the conference. The meeting took place in a hotel along the sea with fantastic views, food, and atmosphere.

Main topics that were discussed included: Plant physiology in stress environment, agroclimatology, carbon cycle, soil and water management, soil and water pollution, desertification and land degradation, soil quality improvement, soil and water conservation, soil and water pollution, GIS and remote sensing,

pedology, plant nutrition and soil fertility, Irrigation and water quality, biodiversity soil microbiology and biochemistry. Papers on soil physics and water management were excellent, they were good examples of interdisciplinary studies in soil science.

A general very useful discussions took place in the last day of the meeting including:

1. Soil biological (plant microbial ecology) and physical system need to be addressed together for sustainable management and conservation of the soil resources.
2. We need to pay attention to the paper published in June 2004 in Science Magazine SOIL ISTHE FINAL FRONTIERS to develop integrated approaches that may lead to exercise more practical soil science for public consumption.
3. We must pay attention to teaching of soils and education to provide better conditions for future soil scientists.
4. Soil degradation, loss of organic matter, carbon sequestration soil quality and soil crop management systems are important major issues together with residue management, organo-mineral fertilizers, P and N management, effect of new agricultural technologies on soil-plant systems, K dynamics and leaching, organic farming we must keep in mind.
5. Pedological studies remains to be essential. Global Soil Change emerging a new overarching area in Soil Science.
6. Efforts of the young scientists were very much appreciated.
7. We must work with other related scientists, such as geologist, engineers, chemist, ecologists etc to identify new avenues.



Participants of the meeting



Upcoming meetings

2009

14th International Clay Conference
12-20 June **Italy**

Meeting on Soils with Mediterranean Type
of Climate - 22-26 June **Lebanon**

Soil organic matters - 23-25 June **UK**

Functions of soil in a pan European context
23-25 June **Czech Republic**

16th Nitrogen Workshop - 28 June-1 July **Italy**

7th International Conference on Geomorphology
6-11 July **Australia**

Int. Symposium on Soil Organic Matter Dynamics
6-9 July **USA**

11th International Symposium on Soil and Plant
Analysis 21-25 July **USA**

42nd IPUAC Chemistry Solutions - 2-7 Aug **UK**

Pedometrics 2009 - 26-28 Aug **China**

Humic Substances in Ecosystems 8
13-17 Sept **Slovakia**

8th International Carbon Dioxide Conference
13-19 Sept **Germany**

International conference on cryopedology
14-20 Sept **Russia**

Bridging the Centuries: 1909-2009 - 100 years of
soil science - 16-17 Sept **Hungary**

Salinization conference - 20-23 Sept **Hungary**

Biohydrology 2009: Biology and soil hydrology
interactions - 21-24 Sept **Slovakia**

Advances of molecular modelling of
biogeochemical interfaces
6-7 Oct **Germany**

Int. Symposium on Environmental Pollution
Mediterranean
7-11 Oct **Italy**

5th SUITMA conference
21-25 Sept **USA**

ASA-CSSA-SSSA International annual meeting
1-5 Nov **USA**

Living with Landscapes
1-5 Nov **Egypt**

Soil geography: New horizons
16-20 Nov **Mexico**

5th conference of the African Soil Science Society
22-28 Nov **Cameroun**

XVIII Congreso Latinoamericano de la Ciencia del
Suelo - 16-20 Nov **Costa Rica**

Int. Conf. on Food Security and Environmental
Sustainability - 17-20 Dec **India**

2010

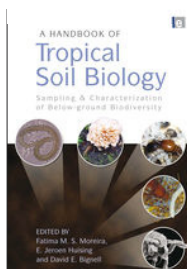
4th Int. Conf. on Plants & Environmental Pollution
7-10 Feb **India**

Int. Conf. on Soil Fertility and Productivity
17-20 Mar **Germany**

19th World Congress of Soil Science, Brisbane,
1-6 Aug **Australia**

ASA-CSSA-SSSA International annual meeting
31 Oct-4 Nov **USA**

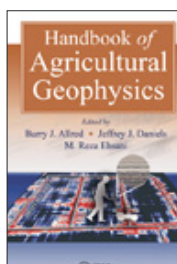
New Publications



A Handbook of Tropical Soil Biology. Sampling and Characterization of Below-ground Biodiversity, by Fatima M. S. Moreira, E. Jeroen Huising and David E. Bignell. Eartscan, 2008.

hardback 9781844076215 £85.00.

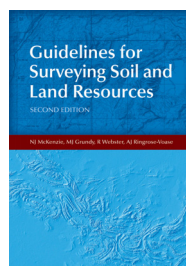
This practical handbook describes sampling and laboratory assessment methods for the biodiversity of a number of key functional groups of soil organisms, including insects, earthworms, nematodes, fungi and bacteria. The methods have been assembled and the protocols drafted by a number of scientists associated with the UNEP-GEF funded Conservation and Sustainable Management of Below-Ground Biodiversity Project, executed by the Tropical Soil Biology and Fertility (TSBF) Institute of the International Center for Tropical Agriculture (CIAT). The methods provide a standardized basis for characterizing soil biodiversity and current land uses in terrestrial natural, semi-natural and agro-ecosystems in tropical forests and at forest margins. The aim is to assess soil biodiversity against current and historic land use practices both at plot and landscape scales and, further, to identify opportunities for improved sustainable land management through the introduction, management or remediation of soil biota, thus reducing the need for external inputs such as fertilizers and pesticides. The book also contains extensive advice on the handling of specimens and the allocation of organisms to strain or functional group type.



Handbook of Agricultural Geophysics. Edited by Barry Allred, Jeffrey J. Daniels, Mohammad Reza Ehsani. ISBN: 9780849337284.

Focuses on the use of near-surface geophysics for agricultural applications. Describes three common near-surface geophysical methods that can be employed for agricultural purposes. Provides detailed examples and case histories of agricultural applications for these geophysical methods. Presents theoretical insight on soil electrical

conductivity measurement. Includes geophysical methods not typically used for agriculture currently but with possible future applications. Precision farming, site infrastructure assessment, hydrologic monitoring, and environmental investigations - these are just a few current and potential uses of near-surface geophysical methods in agriculture. Responding to the growing demand for this technology, the Handbook of Agricultural Geophysics supplies a clear, concise overview of near-surface geophysical methods that can be used in agriculture and provides detailed descriptions of situations in which these techniques have been employed. Visit www.crcpress.com for more details.



Guidelines for surveying soil and land resources Edited by N.J. McKenzie, M.J. Grundy, R. Webster, A.J. Ringrose-Voase. CSIRO Publishing, 2008. ISBN: 9780643090910.

Guidelines for Surveying Soil and Land Resources promotes the development and implementation

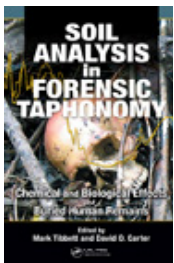
of consistent methods and standards for conducting soil and land resource surveys in Australia. These surveys are primarily field operations that aim to identify, describe, map and evaluate the various kinds of soil or land resources in specific areas. The advent of geographic information systems, global positioning systems, airborne gamma radiometric remote sensing, digital terrain analysis, simulation modelling, efficient statistical analysis and internet-based delivery of information has dramatically changed the scene in the past two decades. This authoritative guide incorporates these new methods and techniques for supporting natural resource management. Soil and land resource surveyors, engineering and environmental consultants, commissioners of surveys and funding agencies will benefit from the practical information provided on how best to use the new technologies that have been developed, as will professionals in the spatial sciences such as geomorphology, ecology and hydrology. Visit www.publish.csiro.au/nid/22/pid/5650.htm for more details.



Geomorphometry. Edited by Tomislav Hengl and Hannes I. Reuter

Elsevier Science 2008. ISBN: 978-0-12-374345-9. A title in the *Developments in Soil Science* series. Geomorphometry is the science of quantitative land-

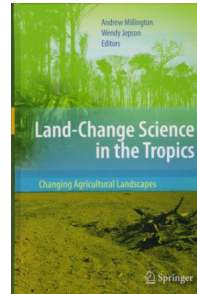
surface analysis. It draws upon mathematical, statistical, and image-processing techniques to quantify the shape of earth's topography at various spatial scales. The focus of geomorphometry is the calculation of surface-form measures (land-surface parameters) and features (objects), which may be used to improve the mapping and modelling of landforms to assist in the evaluation of soils, vegetation, land use, natural hazards, and other information. This book provides a practical guide to preparing Digital Elevation Models (DEM) for analysis and extracting land-surface parameters and objects from DEMs through a variety of software. It further offers detailed instructions on applying parameters and objects in soil, agricultural, environmental and earth sciences. This is a manual of state-of-the-art methods to serve the various researchers who use geomorphometry. Visit www.elsevierdirect.com/product.jsp?isbn=9780123743459 for more details



Soil Analysis in Forensic Taphonomy: Chemical and Biological Effects of Buried Human Remains, by Mark Tibbett and David O. Carter (eds). CRC Press, Hardback, 2008. \$99.95. ISBN: 9781420069914. Soil Analysis in Forensic Taphonomy: Chemical and Biological Effects of Buried Human

Remains is the first book to concentrate entirely on the telling impact of soil and its components on the postmortem fate of human remains. Examining the basic physicochemical composition of the soil as it relates to forensic science and taphonomy, leading experts from across the world: Offer an introduction to the nature, distribution, and origin of soil materials in forensic comparisons; Discuss the action of biological soil components, including invertebrates, fungi, and bacteria; Address rates and processes of decomposition and time of death estimates; Detail methods for characterizing and fingerprinting soils; Provide extensive information on the decomposition of hair. Edited by Mark Tibbett, a soil microbiologist and David Carter, a forensic scientist, this unique resource provides an up-to-date overview of fundamental scientific principles

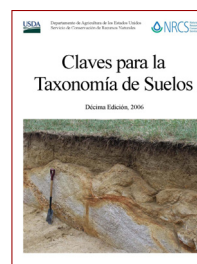
and methods used in forensic taphonomy from a soils-based perspective. It provides an understanding of the processes at work, as well as practical methods and advice for those involved with active investigation.



Land Change Science in the Tropics - Changing Agricultural Landscapes, by Millington, Andrew; Jepson, Wendy (Eds.)

Springer, 2008, XVIII, 274 p. 50 illus., Hardcover, ISBN: 978-0-387-78863-0. Land use and land-cover change research over the past decade has focused mainly on

contemporary primary land-cover conversions in the tropics and sub-tropics, with considerable resources dedicated to the explanation and prediction of tropical deforestation and often ignoring the dynamism in the world's agro-pastoral landscapes. This collection integrates cutting-edge research in the social, biogeophysical, and geographical information sciences to understand the human and environmental dynamics that change the type, magnitude and location of land uses and land covers in the changing countryside. Our contributors are from across the globe and draw on diverse empirical pan-tropical case studies and disciplinary influences. The research reported examines land-use and land-cover change in Bolivia, Brazil, China, Colombia, Côte d'Ivoire, India, Malawi, Mexico, Pakistan, Peru, Senegal and Thailand. Each chapter in this book advances one of three themes: (i) adaptations and change in settled agricultural zones, (ii) agricultural intensification, and (iii) markets and institutions. This book describes the monitoring of land-cover changes, explains the processes through which land is altered, and describes the development of spatially-explicit models to predict land change. This book illustrates how practitioners have integrated knowledge from the three scientific realms - social, biophysical, and GIScience - that underpin land-change science.



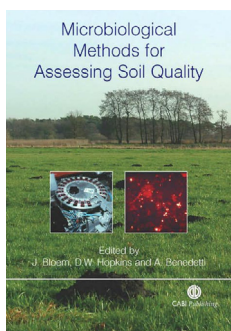
Claves para la Taxonomía de Suelos, Décima Edición. (PDF; Spanish translation; 3.6 MB) For

decades, NRCS has worked with soil scientists from around the world to increase awareness and expand knowledge concerning the importance of soil and its

impact on all aspects of life. By translating the 'Keys' into Spanish, many soil scientists and other

professionals from Latino America, the United States, and other countries will benefit from this effort for years to come. According to NRCS leadership, it will expand the horizons of U.S. Soil Taxonomy by having professionals in all parts of the world applying and interpreting the system in a more uniform and consistent way. While soils differ globally, the ability to apply a system that is universally understood and accepted is a goal shared by many soil scientists. The translation of the 'Keys' into Spanish was the initiative of Luis Hernandez, Arkansas State Soil Scientist. In addition to the PDF file listed above, the publication is available on a CD and can be requested by contacting the **National Soil Survey Center** in Lincoln, Nebraska, USA. A limited number of hard copies will be printed.

Tropical Resource Management Papers. Free access to over 90 PDFs (1990-2008) of the Tropical Resource Management Papers. The main objective of this series of papers is to allow a wider distribution than the circuit of international scientific journals for the results of research on (sub)tropical resource management. The series is written by researchers and graduate students working within the framework of Wageningen research projects. Since the start in 1992, the focus of TRMP broadened from Sahel countries to the whole of Africa and to the whole of developing countries in the tropics. Since 2008 digital versions of more than 90 books are available. However, in some countries access to internet is often slow and scarce and for this reason its will be possible, upon request, to receive hard copies of the TRMP books. Visit www.trmp.wur.nl for more information or e-mail Leo.Stroosnijder@wur.nl

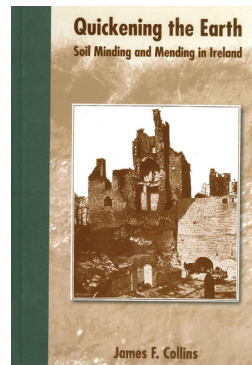


Microbiological Methods For Assessing Soil Quality

Edited by J. Bloem, Alterra, Wageningen, The Netherlands; D.W. Hopkins, University of Stirling, UK; A. Benedetti, Istituto Sperimentale per la Nutrizione delle Piante, Rome, Italy. With growing concern about the protection of soil

quality and biodiversity many countries have established regional and national programmes to monitor soil quality. This book reviews the theory and practice of a range of the various microbiological methods used within these programmes. The first section gives an overview of approaches to monitoring,

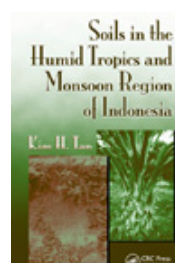
evaluating and managing soil quality. The second section provides a practical handbook with detailed descriptions of the methods. The methods are described in chapters on soil microbial biomass and numbers, soil microbial activity, soil microbial diversity and community composition, and plant-microbe interactions and soil quality. Finally, a census is given of the main methods used in over 30 European microbiological laboratories.



Quickening the Earth: Soil Minding and Mending in Ireland.

J.F. Collins, School of Biological and Environmental Science, UCD, Dublin, 2008. This book documents the ways and means adopted by generations of Irish farmers to maintain and restore soil fertility over many centuries.

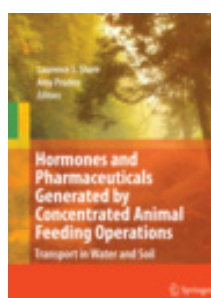
All available natural materials were used: calcareous corals, clays, gravels, sands and shells; burnt lime; stable manures, composts, and seaweed/kelp. Separate chapters are also devoted to lime-burning; paring/burning/subsoil roasting; and to the shorter histories of warping/watering; salt/guano imports and bone treatment/products. As well as documenting advances in soil and agricultural sciences, and drawing material from the husbandries and the economic/social sciences, this book highlights the contributions made by Irish writers to the knowledge of soils and especially to the problem of soil acidity. Though focussed on Ireland, the research is likely to be of interest to those working in many disciplines including soil management, chemistry, fertility and pedology. E-mail: james.collins@ucd.ie Price €40.00; packaging and posting extra.



Soils in the Humid Tropics and Monsoon Region of Indonesia,

by K.H. Tan. CRC Press, 2008. ISBN 10: 1420069071 Highlighting the vast differences in tropical climate, from hot and humid to cool and arctic, this book explores the climate, soil zones, and altitudinal variation in soil formation. The author explores the changes in geomorphology, especially in climate and vegetation above sea level, that have yielded zones of different soils. The book makes accessible hard-to-find information translated from Dutch archives. Informally divided into two parts, it begins

with coverage of the development of soil science in Indonesia. The author reviews the geography and geomorphology of the archipelago, climate, vegetation, and mineralization and humification processes as factors of soil formation. The second part examines the major soils, their genesis, properties, taxonomy, land use, and evaluation. The discussion moves from lowlands, to uplands, then mountains, and concludes with andosols found in the mountains as well as in the lowlands. Focused and timely, this book knits new knowledge with old but important information that has been previously difficult to access.



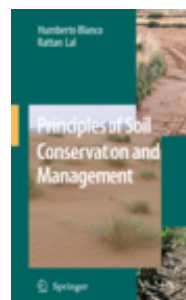
Hormones and Pharmaceuticals Generated by Concentrated Animal Feeding Operations Transport in Water and Soil, by Shore, Laurence S.; Pruden, Amy (Eds.) Springer, 2009. ISBN: 978-0-387-92833-3.

This book examines how hormones, antibiotics and pharmaceuticals generated from concentrated animal feeding operations (CAFOs) of cattle, poultry, swine and aquaculture are transported in water and soil. Little is known of the environmental fate of the tons of physiologically active steroid hormones released each year. In their own regard, in the last 20 years considerable attention has been given to a wide variety of natural and anthropomorphic agents known as endocrine disrupting compounds (EDCs). Until the contribution of steroid hormones to the environment are better defined, it will be difficult to quantify the exact impact of EDCs. While some advances in the understanding of the fate of these compounds in water has been made, little is known about the processes that govern their transport in soil or how they eventually reach groundwater. As this book discusses extensively, it is somewhat of a mystery how steroids, with their lipophilic nature, strong binding to humic acids and extensive metabolism by soil bacteria, can be transported through even a few centimeters of soil, let alone 20 to 40 meters to the groundwater. With respect to antibiotics, the emphasis is on their fate and transport in the environment and on the emergence of antibiotic resistant bacteria. Impacts on soil ecology, including the impact of antibiotics on the metabolism of other active agents, is also discussed.



Laboratory and Field Testing of Unsaturated Soils, by Tarantino, Alessandro; Romero, Enrique; Cui, Yu-Jun (Eds.) Springer, 2009. ISBN: 978-1-4020-8818-6. This collection focuses on recent advances in laboratory and field testing of unsaturated soils. Leading

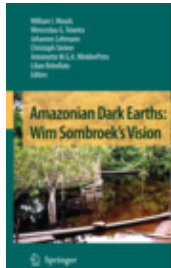
researchers from fourteen countries to represent global research in the area of experimental unsaturated soil mechanics have been invited to contribute to this book. Twelve reports are presented dealing with measurement and control of suction and water content, mechanical, hydraulic, and geo-environmental testing, microstructure investigation, and applications of unsaturated soil monitoring to engineering behaviour of geo-structures. The main motivation behind this book is the rapid growth of experimental unsaturated soil mechanics over the last couple of decades. Several innovative laboratory and field techniques have been introduced in mechanical, hydraulic, and geo-environmental testing. However, this information is widely dispersed in journals and conference proceedings and researchers and engineers beginning to work in the field of unsaturated soil mechanics may find it difficult to identify suitable equipment and instrumentation for research or professional purposes



Principles of Soil Conservation and Management, by H. Blanco & R. Lal. Springer, 2008. ISBN: 978-1-4020-8708-0. 'Principles of Soil Management and Conservation' comprehensively reviews the state-of-knowledge on soil erosion and management. It discusses in detail soil conservation topics in

relation to soil productivity, environment quality, and agronomic production. It addresses the implications of soil erosion with emphasis on global hotspots and synthesizes available from developed and developing countries. It also critically reviews information on no-till management, organic farming, crop residue management for industrial uses, conservation buffers (e.g., grass buffers, agroforestry systems), and the problem of hypoxia in the Gulf of Mexico and in other regions. This book uniquely addresses the global issues including carbon sequestration, net emissions of CO₂, and erosion as a sink or source of C under different scenarios of soil management. It also deliberates the implications of the projected global

warming on soil erosion and vice versa. The concern about global food security in relation to soil erosion and strategies for confronting the remaining problems in soil management and conservation are specifically addressed.



Amazonian Dark Earths: Wim Sombroek's Vision, edited by W.I. Woods, W.G. Teixeira, J. Lehmann, C. Steiner, A. WinklerPrins, and L. Rebellato. Springer, 2009. ISBN 978-1-4020-9030-1. Amazonian soils are almost universally thought of as extremely forbidding. However, it is

now clear that complex societies with large, sedentary populations were present for over a millennium before European contact. Associated with these are tracts of anomalously fertile, dark soils termed *terra preta* or black earths. These soils are presently an important agricultural resource within Amazonia and provide a model for developing long-term future sustainability of food production in tropical environments. The late Dutch soil scientist, Wim Sombroek (1934-2003) was instrumental in bringing the significance of these soils to the attention of the world over four decades ago. A free association of international scholars termed the *Terra Preta Nova* Group came together in 2001 and has been very productive, including this volume. Its introductory comments and 28 chapters written by 73 authors relate the latest findings in landscape history, indigenous practices, soil development, soil chemistry, anthropology, and archaeology, and the implications of those to modern social and land stewardship issues.



Soil Memory: Soil as a Memory of Biosphere-Geosphere-Anthroposphere Interaction, by V.O. Targulian, S.V. Goryachkin (eds.). Moscow, 2008 692 p. (In Russian with the extended English introduction and summary). The concept of soil memory is one of the promising

areas in the development of pedology. Its core is the perception of soils and earth's soil cover, or pedosphere, as particular carriers and accumulators of information on the evolution and interaction of all the Earth spheres. Soil and pedosphere are considered to be a memory of interactions in the biosphere-geosphere-anthroposphere. Basic concept and empiric developments of soil memory (the ability to record factors and processes of

pedogenesis in soil solid phase) are elucidated in the special scientific monograph for the first time. The memory of different models of pedogenesis and its combination with sedimentation is analyzed in application to the natural and anthropogenic environments. Potential information capacity of the main hierarchical levels of soil memory from the level of individual soil particles up to the level of soil cover as well as the problem of polymorphism and isomorphism of memory in respect of environment are discussed. Special chapters are in concern with detail analysis of mineral and biogenic memory carriers, such as sand and silt particles, clay minerals, secondary carbonates, Mn-Fe nodules, cutans, soil porosity, humus, biomorphic particles, etc. You can order and read more about this book at: <http://urss.ru/cgi-bin/db.pl?lang=en&blang=ru&page=Book&id=55805&list=65>



Addressing soil degradation in EU agriculture: relevant processes, practices and policies, JRC, 2009.

This report presents the findings of a stock-taking of the current situation with respect to soil degradation processes, soil-friendly farming practices and relevant

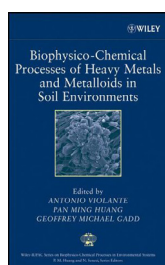
policy measures within an EU-wide perspective. This overview includes the results of the survey on the national/regional implementation of EU policies and national policies, a classification of the described soil degradation processes, soil conservation practices and policy measures, and finally the outcome of the Stakeholder Workshop which took place in 2008. The report can be freely downloaded at: http://eusoils.jrc.ec.europa.eu/ESDB_Archive/eusoils_docs/other/EUR23767.pdf



Digital Soil Mapping with Limited Data, Hartemink, Alfred E.; McBratney, Alex; Mendonça-Santos, Maria de Lourdes (Eds.)

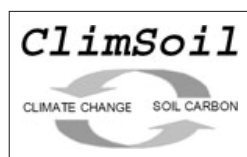
2008, XXIV, 445 p. 109 illus., 55 in color., Hardcover ISBN: 978-1-4020-8591-8. There has been considerable expansion in the use of digital soil mapping technologies and development of methodologies that improve digital soil mapping at all scales and levels of resolution. These developments have occurred in all parts of the world in the past few years and also in countries where it was previously absent. There is

almost always a shortage of data in soil research and its applications and this may lead to unsupported statements, poor statistics, misrepresentations and ultimately bad resource management. In digital soil mapping, maximum use is made of sparse data and this book contains useful examples of how this can be done. This book focuses on digital soil mapping methodologies and applications for areas where data are limited, and has the following sections (i) introductory papers, (ii) dealing with limited spatial data infrastructures, (iii) methodology development, and (iv) examples of digital soil mapping in various parts of the globe (including USA, Brazil, UK, France, Czech Republic, Honduras, Kenya, Australia). The final chapter summarises priorities for digital soil mapping.



Biophysico-Chemical Processes of Heavy Metals and Metalloids in Soil Environments, A. Violante, P.M. Huang, G. M. Gadd (Eds), John Wiley & Sons. 2008. ISBN 978-0-471-73778-0 This volume, which consists of 15 Chapters, is organized into three sections dealing with: (i) Fundamentals on Biotic and Abiotic Interactions of Trace Metals and Metalloids with Soil Components, (ii) Transformations and Dynamics of Metals and Metalloids as Influenced by Soil-Root-Microbe Interactions, and (iii) Speciation, Mobility and Bioavailability of Trace Metals and Metalloids, and Restoration of Contaminated Soils. This book, contributed by a multidisciplinary group of soil and environmental scientists, provides the scientific community with a critical evaluation of the state-of-the-art on the fundamentals of reactions and processes of these elements in soil environments. The book is an important guide to scientists interested in environmental sciences, soil chemistry and mineralogy, soil biochemistry, soil microbiology, and plant nutrition and physiology for understanding the biophysico-chemical processes of these pollutants in soil environments. The latest advances in spectroscopy to study various aspects of heavy metal and metalloid interactions with soil inorganic and organic components are reviewed.

A new report **Review of existing information on the interrelations between soil and climate change**, made public by the European Commission, underlines the crucial role that soils can play in mitigating climate change. Europe's soils are an enormous carbon reservoir, containing around 75 billion

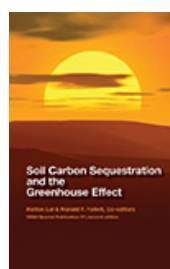


tonnes, and poor management can have serious consequences: a failure to protect Europe's remaining peat bogs, for example, would release the same amount of carbon as an additional 40 million cars on Europe's roads. The report is a synthesis of the best available information on the links between soil and climate change and underlines the need to sequester carbon in soils. The technique is cost competitive and immediately available, requires no new or unproven technologies, and has a mitigation potential comparable to that of any other sector of the economy. The report and key messages can be freely downloaded at: http://ec.europa.eu/environment/soil/publications_en.htm



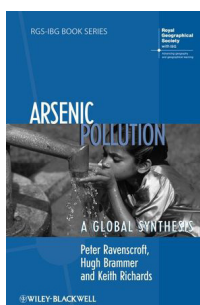
Biochar for Environmental Management, Edited by J. Lehmann and S. Joseph. Earthscan, 2009. ISBN 9781844076581. Biochar is the carbon-rich product when biomass (such as wood, manure or crop residues) is heated in a closed container with little or no available

air. It can be used to improve agriculture and the environment in several ways, and its stability in soil and superior nutrient-retention properties make it an ideal soil amendment to increase crop yields. In addition to this, biochar sequestration, in combination with sustainable biomass production, can be carbon-negative and therefore used to actively remove carbon dioxide from the atmosphere, with major implications for mitigation of climate change. Biochar production can also be combined with bioenergy production through the use of the gases that are given off in the pyrolysis process. This book is the first to synthesize the expanding research literature on this topic. The book's interdisciplinary approach, which covers engineering, environmental sciences, agricultural sciences, economics and policy, is a vital tool at this stage of biochar technology development. This comprehensive overview of current knowledge will be of interest to advanced students, researchers and professionals in a wide range of disciplines.



Soil Carbon Sequestration and the Greenhouse Effect, 2nd edition, edited by Rattan Lal and Ronald F. Follett. Soil Science Society of America, 2009. ISBN: 978-089118-850-6. The concept of the Greenhouse Effect is more than a century old, but today the observed

and predicted climate changes attributed to anthropogenic increases in atmospheric CO₂ more urgently beg the question, what can be done? The second edition of *Soil Carbon Sequestration and the Greenhouse Effect* is essential reading for understanding the processes, properties, and practices affecting the soil carbon pool and its dynamics. New themes addressed are urban soils, minesoils, biochemically recalcitrant compounds, carbonaceous materials, belowground carbon storage by woody plants, and peat soils. The geographic focus of the book is North America, with important chapters from Canada and Mexico. Thematically, the second edition encompasses data from modeling, lab analyses, plot studies, landscape assessment, and regional evaluation of soil carbon pools and fluxes.



Arsenic pollution: A global synthesis. P. Ravenscroft, H. Brammer and K. Richards. Wiley-Blackwell, Oxford (UK), Malden MA (USA). 2009 xxviii + 588 p. ISBN 978-1-4051-8602-5 (hardcover); 978-1-4051-8601-8 (softcover). £65/US\$129.95 (hardcover), £34.99/US\$69.95 (softcover)

Arsenic Pollution compiles and summarises the most up-to-date research on the distribution and causes of arsenic pollution in nature, its impact on health and agriculture, and the encouraging research that offers hope in mitigating this unfolding health crisis. Seamlessly integrating geochemistry, hydrology, soil science and agriculture, it offers the first truly global and interdisciplinary account of natural arsenic pollution. The book provides information on the geographical distribution of arsenic contamination of groundwater, the geochemical causes of high arsenic concentrations in aquifers, the factors influencing soil and plant uptake of arsenic, and the health implications of prolonged arsenic ingestion via drinking water and food (especially rice). Options are highlighted for developing alternative water sources, methods for arsenic testing and removal, and mitigation of arsenic impacts on sustainable agriculture. Comprehensive and illuminating, the book offers informed and challenging insights into an emerging problem with untold human consequences.

IUSS Honorary members

Year	Member	Country	Year	Member	Country
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. Kubiena †	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	
1978	F. Scheffer †	Germany	P.B.H. Tinker	UK	
	G. Barbier †	France	2006	W.E.H. Blum	Austria
	V. Ignatieff †	Canada		H-P. Blume	Germany
	Y. Ishizuka †	Japan	J. Bouma	Netherlands	
	L. Krolkowski †	Poland	S-J. Cho	South Korea	
1982	L. Vettori †	Brazil	J. Glinski	Poland	
	Ph. Duchaufour †	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			

