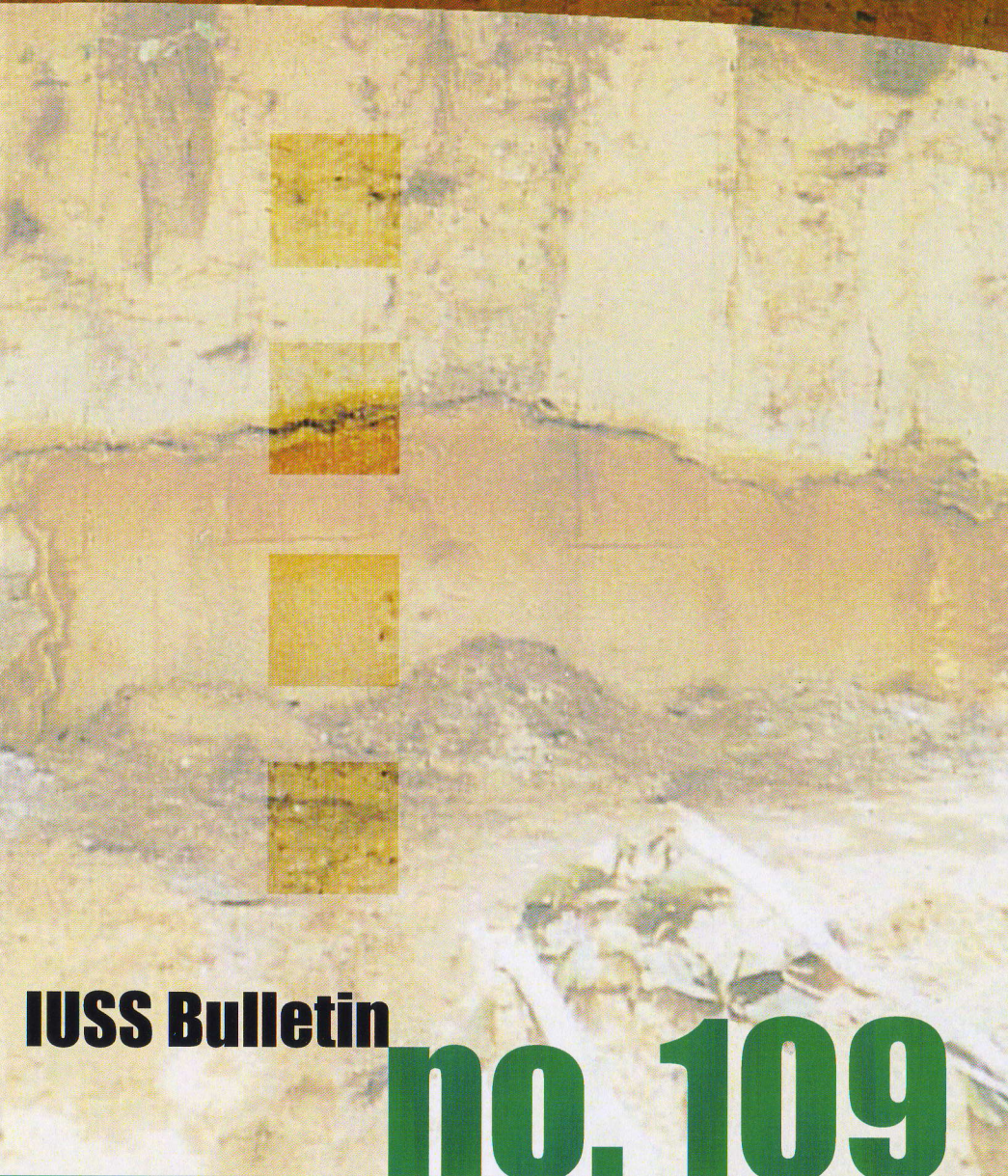


International Union of Soil Sciences



IUSS Bulletin

no. 109



International Union of Soil Sciences (IUSS)

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

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Editorial

The bulletin has been the main newsletter of the ISSS and successively the IUSS. The first bulletin appeared in 1952 and was produced at the Royal Tropical Institute in Amsterdam where the ISSS Secretary-General, Prof. F.A. van Baren, was working. The foreword of the first bulletin was by Prof. R. Tavernier:

"..the bulletin aims to pass on official information about all important events concerning the life and activity of the Society to its members and to National Societies and Regional Groupings as well as to Research Institutes.....members had expressly shown their desire to be informed about these activities and about the development of Soil Science in the diverse countries of the world."

The first issue started with information on the next congress that was to be held in the Congo in 1954. It was followed by activities of commissions, information on national societies, miscellaneous news, activities of FAO in the field of Soil Science, upcoming meetings, new publications, obituaries, letters to the editor, and a list of addresses. Does that sound a little bit familiar, 54 years later?

For more than 20 years the Bulletin was produced by Prof. F.A. van Baren in Amsterdam, then it moved to Rome (Prof. R. Dudal), to Wageningen (Dr. W.G. Sombroek), Vienna (Prof. W. Blum) and has been put together in Wageningen since 2002. Since the late 1960s, Drs Hans van Baren has reviewed books for the Bulletin and he continues to do so. In all those years the main purposes of this newsletter has not changed: informing the global soil science community about past, current and future activities. No doubt it has helped to create some sort of corporate soil science feeling in the diverse countries of the world (as Tavernier called it).

One wonder whether in this current world of internet, RSS feed and e-mail alerts a bulletin with often more than of 80 to 90 pages still has any merit. I think it does. The global soil science information stream is continuous but the IUSS Bulletin is a twice per year returning piece of information prompting both readers and writers to reflect on the IUSS and its activities. And as long as each Bulletin is downloaded over 10,000 times from the IUSS website we must assume that it has a role in the global soil science community. We shall continue to enhance that role which may be more opportune now given the rapid changes in our discipline and society at large.

This Bulletin 109 starts with a brief report on the IUSS council meeting in July by the Secretary General Stephen Nortcliff followed by an introduction of the new IUSS President and Vice President and some notes on the next World Congress of Soil Science. There is a short description of the activities and aims of all divisions and commissions which may be of use for all new officers (who are also listed at the end of the bulletin). There are contributions from Benno Warkentin, Edoardo Costantini and Jaume Bech and please send us more of those! The Bulletin is not so much about soil science as about soil scientists so we continue with the *Five Questions* section, and there is an extensive overview of all awards and prizes that have been given in the past months. Congratulations to all! I had asked colleagues from Brazil, Syria, China, Tanzania, USA whom attended the World Congress of Soil Science to write about the congress – their reports are included in this Bulletin. There are also reports of other meetings and a list of Upcoming Meetings. At last, there is the text of the IUSS song (MP3 is on the IUSS website) and a list of all Honorary members.

Although the setup of the IUSS bulletin has not really changed over the past 50 years, the Bulletin can only be as good and diverse as its contributions. Therefore, if you have ideas, short articles, pictures or anything you would like to share with the global soil science community, please send it.

Alfred Hartemink
Deputy Secretary General IUSS
Wageningen, September 2006
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IUSS Council Meeting July 2006 - A brief report

The IUSS Council Meetings are held at each World Congress of Soil Science and also at the Inter-Congress meeting (normally held at the mid point between two consecutive World Congresses). In Philadelphia the Council met twice, on July 9 and July 14

Participants

At the first meeting there were some 50 Council Members present, comprising the Executive Committee (12) National Member representatives (35), Honorary Member representatives (3), Members of the US 18th WCSS Organising Committee, and observers from the Commissions, Sub-Commissions and Working Groups.

The second meeting was somewhat better attended with some 63 Council Members present, comprising the Executive Committee (13), National Representatives (47), Representatives of the Honorary Members (3). Members of the US 18th WCSS Organising Committee (4) were also present. At both meetings there were a number of observers from Commissions and National Bodies (20 at the second meeting).

Welcome

The Meetings were chaired by the IUSS President, Donald Sparks who welcomed all present at the meeting, outlined the voting procedures and the rules of the meeting (only accredited members had a vote) and thanked all for their attendance.

Minutes of the Inter-Congress Meeting

The Secretary General (Stephen Nortcliff) requested comments on the Minutes of the Inter-Congress Council Meeting held here in Philadelphia in April 2004 – No comments were received and the Minutes were accepted as a correct record

President's Report

The President (Don Sparks) presented a brief report of activities since the Inter-Congress Meeting, in particular he thanked the Organising Committee for the 18th WCSS under the leadership of Larry Wilding and Lee Sommers, and the considerable work of the Divisional and Commission Officers and Symposia Convenors in producing the exceptionally full and diverse programme for the coming week.

He noted that when he took over as President in 2002 a decision was taken to spread the load of responsibilities amongst members of the Bureau (President, Vice-President, Secretary General and Deputy Secretary General). This had proved to be a success.

A feature of the last four years had been the increased level of collaboration between IUSS and other members of the ICSU (International Council of Science) Family. This was particularly strong in relation to the International Year of Planet Earth.

He noted that one of the features of our increased activity was a concerted effort on 'outreach', under this broad theme, he thanked Alfred Hartemink (DSG) for his considerable efforts in bringing together the booklet entitled 'Future of Soil Science'. He also noted the success of the booklet within the framework IYPE entitled 'Soil – The Earth's Living Skin' written jointly by David Dent, John Kimble and Alfred Hartemink. Given the increased need to promote the subject of soil science and the importance of soils in many environmental contexts, contributions such as these are most important and the plan for the future is to increase this type of outreach activity.

Whilst there has been some excellent work amongst the Divisions and Commissions, the President suggested that greater effort must be directed towards ensuring that there are strong activities in all Divisions, Commissions and Working Groups between Congresses and increased collaboration both between Divisions and Commissions within IUSS and with other Unions.

A key feature during the last four years had been the Establishment of our two IUSS prizes: The Dokuchaev Prize and The Liebig Prize

It is important that Members are aware of these prizes and that quality nominations are presented to the Standing Committee on Prizes and Awards when the call is made.



Secretary General's Report

The Secretary General presented his report, summarising activities during the two year period since the InterCongress Council Meeting in Philadelphia, stressing the need for all member bodies to ensure that contact was maintained with the SG to ensure that the members were fully informed of IUSS activities and involved in all the wide range of activities. There had been moves since Bangkok in 2002 to promote December 5th as World Soil Day. Our aim was to do this with the support of the King of Thailand and this is still our aim, but progress has been exceptionally slow. There are events in some Member Countries where World Soil Day is actively supported and indeed celebrated.

As part of the Bureau Initiatives we have proposed to produce a small number of 2 side documents presenting information on key themes in Soil Science for a non-technical audience. The Secretary General has received copy for three of these brochures, but considers that further work must be done to finalise them in a form suitable for publication. Finally the Secretary General recorded his thanks for the support of Alfred Hartemink the Deputy Secretary General.

18th WCSS Report

Larry Wilding and Lee Sommers (joint Chairs of the 18th WCSS Organising Committee) presented a brief illustrated report on the current programme and participants. They later presented some observations concerning the key features involved in planning a world Congress



Serious business for the benefit of our discipline

Elections 2006

The Secretary General presented the results of the elections. He noted that this was the first time we had endeavoured to organise the elections amongst the whole membership rather than simply those who attended the WCSS. The process had not been as smooth as it would have been hoped for, with only 27 countries returning results, and amongst these there was considerable variability in how the voting was managed nationally.

In future it is necessary to encourage more National Members to conduct ballots amongst their membership and return the results of the ballot by the identified deadline. It is also important that the number of votes cast be returned to the Secretary General (in his role as Returning Officer).

Following some lively discussion on the election process, alterations to the Bye Laws aimed at improving the process were developed and these were approved at the second meeting of Council.

As part of the Election process it is necessary to confirm the following Officers:-

Secretary General Stephen Nortcliff
Deputy Secretary General Alfred Hartemink
Treasurer Jim Gauld

The Election Results including the appointment of Secretary General, Deputy Secretary General and Treasurer were endorsed by Council.

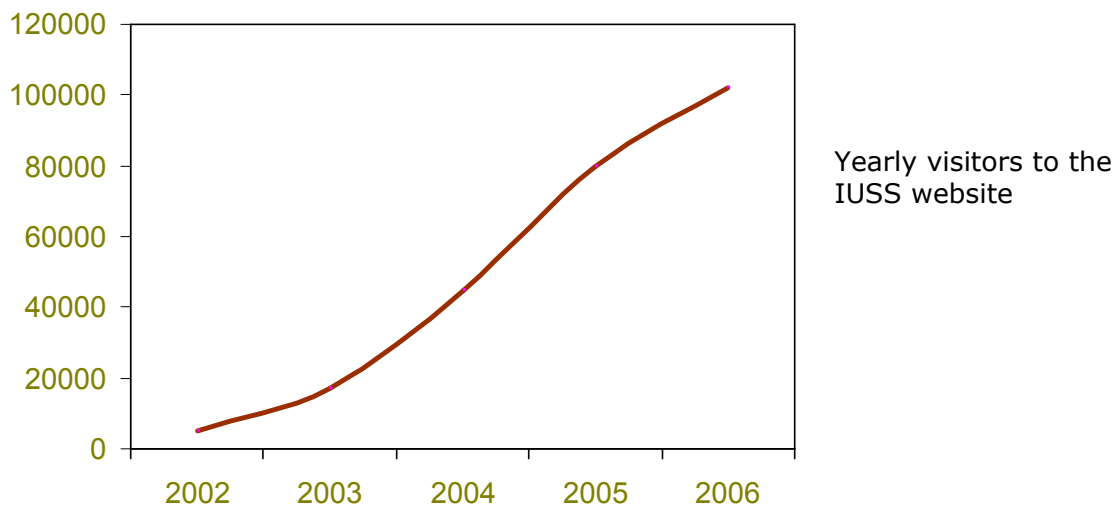
The next round of elections will run in 2007 so that the process is in line with our Statutes and Bye-Laws. Nominations will be requested in 2007.

Deputy Secretary General's Report

The Deputy Secretary General (Alfred Hartemink) presented his report to Council. He highlighted the following broad areas:

a. The Bulletin – There has been a reduction in the number of paper copies produced, with many copies being dispatched electronically. All Bulletins are available on the IUSS website and are downloaded on a very substantial basis. Given the costs involved in the production and mailing of the Bulletin for the two editions produced annually, it is proposed to reduce further the number of printed copies. To be successful the Bulletin requires contributions from as many members as possible, and whilst this has improved in recent years, the Deputy Secretary General would welcome more contributions from both Officers and members.

b. The website (www.iuss.org) is progressing very well. In October 2005 the website has been changed and developed and annually there are more than 100,000 visitors to the IUSS website. Reports from members are that the website is considered to be a very valuable IUSS asset. It is hoped to develop this website in to a more interactive format in the near future.



c. IUSS Alerts – The DSG had introduced the monthly IUSS Alerts with current news and information. This initiative has proved exceptionally popular amongst the membership, and the number of subscribers has increased dramatically in recent months and continues to increase to over 12,000 members.

d. Following discussions the DSG took the initiative and agreed to co-ordinate the small publication of contributions entitled 'The Future of Soil Science'. This was a new initiative amongst IUSS members and the booklet was part of the overall delegate b\pack at WCSS.

e. Together with John Kimble and David Dent the DSG had produced the 'Soil – Earth's Living Skin' booklet as part of the IUSS contribution to the International Year of Planet Earth. Again this was included in the delegate pack and had been well received.



Treasurer's Report

The Treasurer (Jim Gauld), firstly introduced himself to Council Members presented his report and the Audited Accounts for 2004 and 2005 to Council. He outlined the broad Accounting Procedures involved in terms of 'year ends' and timing of payments in relation to the accounting year.

Following the presentation the Treasurer was congratulated on the clarity of the accounts as presented. Boris Jansen (Netherlands) asked about the efficacy of keeping the reserve at its current level. In response the President pointed out that the reserve provided the IUSS with the ability to take initiatives in support of its Members and Soil Science in general. During the last four years we had begun to increase the activities of IUSS beyond the day to day activities of running the Union and working towards the World Congress. These type of activities required funds, and it was our intention to continue and develop further initiatives.

The accounts were accepted by the meeting.

Awards and Prizes Standing Committee Report

The Chair of the Awards and Prizes Standing Committee (Winfried Blum) presented his report to Council. The successful Prize winners are:-

Dokuchaev Prize – Victor Targulian (Russia)

Liebig Prize – Rattan Lal (USA).

Winfried Blum highlighted the need for the membership to nominate candidates for this award.

Budget and Finance Standing Committee Report

Robin Harris (Chair of Budget and Finance Standing Committee) presented his report which was tabled. In addition to informing Council of the outcome of recent negotiations with the National Academy of Sciences, which averaged over the next four years was likely to see an increase in the current subscription of \$50000, he also presented two scenarios, both anticipated increased spending on outreach (c. \$20000 per annum), the first was based on no subscription increase the second on a 25% subscription increase. Both scenarios indicated a reduction in the net worth of IUSS, the former resulting in a rapid decline of net worth if all current activities and planned future activities are maintained. On his analysis Robin Harris recommended a subscription increase of 25% and a change in Bye Law 7.3 to accommodate this. This recommendation was endorsed by the Executive Committee. The recommendation was accepted by the meeting without dissent.

Report of the 19th WCSS

Roger Swift (President Elect) presented a brief 'state of play' report on the 19th WCSS in Brisbane, August 2010.

The choice of location of the 20th WCSS

The Secretary General had received to invitations for the 20th WCSS:-

- a. Brazilian Soil Science Society
- b. Korean Society of Soil Science and Fertilisers

The President invited representatives from each of these two Societies to make short presentations

Mateus Rosas Ribeiro President of the BSSS presented two DVD presentations in support of the bid from Brazil and answered questions from Members of Council concerning the proposed location of the Congress and the level of financial and government support. It was also stressed that this proposal had been endorsed by the Latin American Congress of Soil Science. Jai-Joung Kim made a PowerPoint presentation outlining the bid from KSSSF and answered a small number of questions. Following a secret ballot it was announced that the 20th World Congress of Soil Science will be held in Seoul, Korea.

The President-elect Roger Swift

As President Elect Roger Swift made a brief presentation on his future Presidency and thanked Don Sparks for his excellent leadership.

Links with ISTRO

The Secretary General reported on discussions he had held with the Chair of ISTRO (International Soil Tillage Research Organisation) concerning establishing closer ties between ISTRO and IUSS. ISTRO had separated from IUSS in the past, in part because of clashes of personality, but with the increased dynamism and activity of IUSS it seemed appropriate that closer ties be established. The Secretary General indicated he would attend the ISTRO meeting in Kiel in late August 2006. The meeting welcomed this approach from ISTRO and agreed that closer ties should be established.

Closing remarks

The President Don Sparks close the meeting thanking the Secretary General, Gary Petersen and other members of the Executive Committee who had provided such helpful and valuable support during his Presidency.

Stephen Nortcliff
Secretary General

New President and Vice president

Professor Roger S Swift

Executive Dean, Faculty of Natural Resources, Agriculture and Veterinary Science,
University of Queensland

Email: deannravs@uqg.uq.edu.au



Roger Swift has had a long record of service to soil science as a teacher, researcher manager and administrator in universities and research organisations. He has worked in the UK, Australia and New Zealand. He graduated in chemistry from Birmingham University lectured in soil science at Manchester, Edinburgh Universities. He was Professor of Soil Science at Lincoln University New Zealand, and at Reading University. In the early 90's he was appointed Chief of Division of Soils in CSIRO in Australia. In 2000, he moved to his current position at the University of Queensland. He has served on a number of national policy and research committee, the councils of scientific societies and on the editorial boards of several journals. Through these and other activities he has made a considerable contribution to the development and progress of soil science.

Professor Swift has also given substantial service to the IUSS and to other soil science societies. He has been Chairman (plus Vice- and Past-Chairman) of IUSS Commission II (Soil Chemistry) and

Contributed to two IUSS working parties. He is a member of three national soil science societies (Australian, New Zealand and British) and has served on the national council of two of these societies. He has been involved in the organisation of three international and six national meetings, all with subsequent published proceedings. He is a Fellow of the Australian Academy of Technology Science and Engineering and of the Royal Society of Chemistry, and received an Australian Centenary Medal for services to environmental science. His research interests have focussed on soil chemistry particularly with respect to



the properties of soil organic matter, mineral colloids and the behaviour of macro- and micro-nutrients and soil contaminants. He has produced around 200 publications (book, chapters and peer-reviewed papers) as a result of these studies.

Roger Swift believes that IUSS needs to be more active on the international scene raising the awareness of global soil issues and that the President should lead these activities rather than being solely concerned with the organisation of the next conference. Working closely with Stephen Nortcliff, the Secretary-General and other members of the Executive Committee, he plans to take a proactive role at ICSU and other relevant forums. He also believes that the format of the IUSS Congress requires some attention to ensure the presentation of high quality, recent work and to promote genuine discussion, and encourages greater involvement of younger scientists.

Dr Neal W Menzies

Associate Professor

School of Land, Crop and Food Sciences

University of Queensland

Email: n.menzies@uq.edu.au



Dr Neal Menzies graduated from the University of Queensland where he specialised in soil science and plant nutrition. Following his PhD, Neal worked as a soil chemist at the International Institute of Tropical Agriculture in Cameroon, and as a lecturer in soil science at the University of Newcastle-upon-Tyne in the UK. He then returned to Australia to take an academic position at the University of Queensland where he has developed strong teaching and research programs in the behaviour of plant nutrients and contaminants in the soil and more recently has developed further interests in issues related to water and waste disposal.

He believes strongly that soil scientists can make a useful contribution to solve a broad range of agricultural and environmental problems. This is reflected in the research projects he has been involved in, including projects in agricultural production, water quality, waste disposal, mined-land rehabilitation, conservation biology, and even

forensic science. Neal is a highly-regarded teacher, and an active researcher with a strong publication record. He assisted in the organisation of the 1998 ASSSI National Conference and the recent International Soil Tillage Research Organisation and International Soil Conservation Organisation Conferences which were held in Brisbane.

Neal has a passion for soil science and has worked hard as a teacher in his role as a supervisor of postgraduate researchers, to bring others into a rewarding field of soil science. Neal also has a strong commitment to the professional organisation, and has served as Secretary, Vice-President and President of the Queensland branch of the Australian Society of Soil Science. Neal is currently President of the ASSSI Federal Council and is pleased to have the opportunity to serve soil science as Vice-President of IUSS. He looks forward to working with his colleague Roger Swift and other members of the IUSS Executive to advance the objectives and influence of IUSS and to help lead the organisation of the 19th WCSS particularly through the development of the Scientific Program of the Congress.

The 19th World Congress of Soil Science

The next World Congress of Soil Science (19WCSS) will be held in Brisbane, Australia in the week of 1st - 6th August 2010. Brisbane is a thriving city with a population of around 1.8 million people and is the capital city of the State of Queensland which is the fastest growing state in Australia. Brisbane has a sub-tropical climate with hot, wet winters and warm, dry winters. August is a winter month with daily maximum temperature of around 20 – 22^oC and the weather is typically sunny and fine.

The Congress will be held at the Brisbane Convention and Exhibition Centre which is a modern, purpose-built facility on the south bank of the Brisbane River. The city centre with shopping malls, a wide range of hotels, business areas and a casino are just a short walk away across the bridge. Further information about the Convention Centre can be obtained at; www.bcec.com.au

The surrounding precinct includes a museum, art gallery, and performing arts centre.

The major responsibility for the organisation of the Congress rests with the Australian Society of Soil Science Incorporated (ASSSI) with assistance from the New Zealand Society of Soil Science. ASSSI has a federal structure with six state or regional branches. All of the branches will participate in the organisation of the Congress and will be represented on the various committees. However the main organisational burden will be borne by the strong and very active Queensland Branch whose members will make up the core of the local Organising Committee.

The Committee Structure will be similar to that used for the Philadelphia meeting comprising;

- Executive Committee – a small group with oversight of all aspects of the Congress, chaired by the President and having the Vice-President, other Committee Chairs and the Secretariat as members
- Scientific Committee – having oversight of the scientific program Chaired by the Vice-President and made up mainly by Australian Chair and Vice-Chairs within the IUSS structure
- Congress Organising Committee – responsible for the organisation and running of the Congress. This Committee will be Co-Chaired by Mike Grundy and Stephen Raine and Philippa Tolmie will be responsible for the Secretariat.
- International Committee – providing advice on scientific and organisational matters, Chaired by the President with a number of IUSS officers and other leading international scientists as member.

We are very grateful to our colleagues in the USA who have kindly made available a large amount of information arising from the organisation and running of the 18th WCSS.

A number of field tours will be organised covering a range of biogeographical regions in Australia and New Zealand. Every effort will be made to organise these tours in a flexible way with respect to transport and accommodation so that they will be run if at all possible and so as not to disappoint those who are keen to participate in the tours as well as those who will have taken the trouble to organise them.

A website (www.19wcoss.org.au) has been secured for the website and this will be started up in the next few weeks and information about all aspects of the Congress will be posted on the website as it comes to hand. This information will also be disseminated through the IUSS Bulletin and brought to your attention through IUSS Alerts.

My colleagues and I are planning to organise a first class Congress for you and look forward to making your visit to Australia a memorable one.

Roger Swift
President, IUSS
rswift@uqg.uq.edu.au



IUSS Alerts May – September 2006

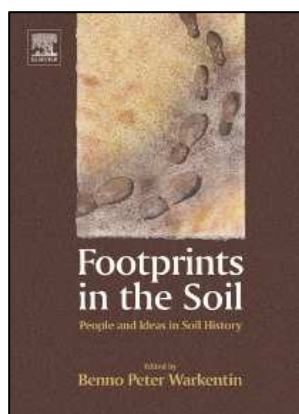


Information for and from the global soil science community

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 May and September 2006.

New soil science books!

Footprints in the Soil - People and Ideas in Soil History



Edited by: Benno P. Warkentin, Oregon State University, Corvallis, USA

The vital functions that soils perform in our shared environment are increasingly appreciated by students of the earth and biological sciences, and by a public concerned with soil degradation and sustainable use of natural resources. For these readers, *Footprints in the Soil* tells the stories of the footprints left by soil users and soil scientists in the last two millennia. It uniquely illustrates the significance of soils knowledge to our society, to improving the human condition. The chapters are written by an international group of authors, each with special interests, bound together by the central theme of how we came to our present understanding of soils.

Publication Date: April 2006; ISBN: 0444521771, Hardback, 564 pp.

Price: \$75.00

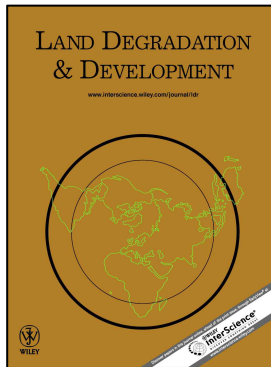
Soils and Societies: Perspectives from Environmental History



'*Soils and Societies: Perspectives from Environmental History*' is a multi-authored volume edited by J.R. McNeill (Georgetown University) and Verena Winiwarter (Vienna and Klagenfurt). It examines the complex interrelations between societies in different parts of the world and the soils they relied on from the perspectives of geomorphology, archaeology, pedology and history. The geographical spread includes Mesoamerica, Africa, Europe, Australia, India and Easter Island.

Few things are more important to human survival than the fertility of the soils from which so much of our food comes. Yet few aspects of the relationship between human society and the environment get so little attention. This book explores some of the enormous variety in the ways that people have worked with, thought about, damaged and restored soils. It also shows some of

the ways in which soils, their properties and their histories have influenced human affairs. Soils are the substrate of all human society: from the palaeolithic to the present, their history is our history. The book is illustrated with haftones, maps, graphs and tables. ISBN: 1874267529; Price: UK £50/ US \$95



Land Degradation & Development

Land Degradation & Development is an international journal that seeks to promote rational study of the recognition, monitoring, control and rehabilitation of degradation in terrestrial environments. The journal has a new Regional Editor for the Americas

Professor R. Lal

Professor of Soil Science, SENR, Director, Carbon Management and Sequestration Center, OARDC/FAES, Columbus, OH, USA

Managing Editor: Dr Chris Barrow, University of Wales, UK

Some recent papers:

Land degradation control and its global environmental benefits

(Vol. 16, No. 2) G. Gisladdottir, M. Stocking

Soil erosion and runoff response to plant-cover strips on semiarid slopes (SE Spain)

(Vol. 17, No. 1) A. Martínez Raya, V. H. Durán Zuazo, J. R. Francia Martínez

Encyclopedia of Earth – call for contributions

Call for contributions to the Encyclopedia of Earth. The world's experts on the environment of Earth, and the interaction between society and the natural spheres of the Earth, are forming to produce a single comprehensive and definitive electronic encyclopedia about the Earth. The Encyclopedia of Earth (EoE) will be free to the public and free of advertising. We seek all qualified editors and authors to collaboratively develop A to Z coverage of topics describing the environment of Earth that span the natural, physical, and social sciences, the arts and humanities, and the professional disciplines. The Encyclopedia is published by the Environmental Information Coalition (EIC), National Council for Science and the Environment (NCSE). NCSE is a non-profit organization with a reputation for objectivity, responsibility, and achievement in its promotion of a scientific basis for environmental decision making. If you are interested and want more information, please send an email to eoearthportal.net

Africa fertilizer summit

The Africa fertilizer summit was held in Abuja, Nigeria 9-13th June. The Summit brought together African heads of state, African ministers, presidents and heads of international donor organizations, private-sector firms, farmers' organizations and senior policymakers. The Summit discussed the food challenges of Africa and its fertilizer crisis. It mapped out regional and national strategies within the framework of agricultural sector development plans and financing mechanisms with the goal to trigger an African Green Revolution. Read the Abuja declaration on fertilizer for Africa green revolution <http://www.africafertilizersummit.org/> (in English, French or Portuguese) or read more on the website of the African Green Revolution <http://www.africangreenrevolution.com/en/index.html>

New IUSS Division chairs

These are now the four IUSS Division chairs:

Division 1. - Soil in Space and Time

Ahmet Mermut from Canada mermut@skyway.usask.ca

Division 2. - Soil Properties and Processes

Ruben Kretzschmar from Switzerland kretzschmar@env.ethz.ch

Division 3. - Soil Use and Management

Wolfgang Burghardt from Germany wolfgang.burghardt@uni-essen.de

Division 4. - The Role of Soils in Sustaining Society and the Environment

Oene Oenema from the Netherlands oene.oenema@wur.nl



The division chairs lead the 4 main soil science themes of the IUSS. Each division has 4 to 6 commissions. All officers are listed on the IUSS website (if not: send us your address details). If you plan a soil science activity fitting one or more of these themes please contact the division or commission officers for further cooperation.

FAO Publications free from www.fao.org

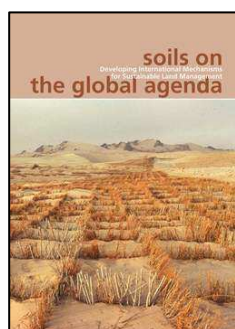
The new edition of the "World reference base for soil resources 2006 A framework for international classification, correlation and communication" can be freely downloaded from the FAO website: **PDF**

The **PDF** from the 4th edition of the "Guidelines for Soil Description" can also be freely downloaded. These guidelines were prepared to assist in the understanding of the nature, properties, dynamics and functions of the soil as part of the landscape and ecosystem. They contain precise instructions how to describe the site and the morphology of a soil in the field. A section is added on the link between soil descriptions and soil classification.

Smithsonian Soils exhibit

The Smithsonian Institution's National Museum of Natural History in Washington, D.C. will open its doors to the story of soil in 2008 with a 450 square metres exhibit. "SOILS: Worlds Underfoot" is a joint project of the museum and the Soil Science Society of America. This special exhibit will be seen by more than six million visitors a year and occupy a hall of the most visited natural history museum in the world. The exhibit will feature hands-on interactives, media components, and 53 soil profiles. You can view a DVD on the project, find out more, and make a gift at www.soils.org/smithsonian or contact Paul Kamps pkamps@soils.org More than \$1 million of the \$2.5 million goal has been raised, with the remainder needed by December 2006.

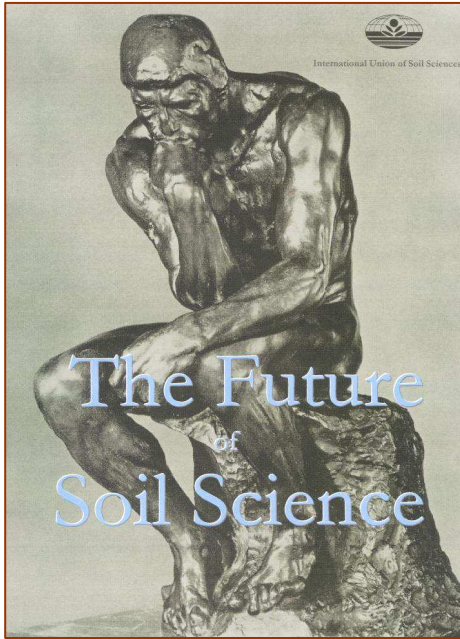
Soils on the global agenda



A report was prepared by the IUSS working group IASUS (International Actions for the Sustainable Use of Soil). The report provides an overview of international actions concerned with sustainable land management, based on contributions from members of the IASUS network. The report consists of three parts: Putting soils higher on the international agenda; Developing international mechanisms for sustainable land management; Priority setting for further action. A PDF (5.4 Mb) of the report can be downloaded from Centre for Development and Environment, in Berne: www.cde.unibe.ch or the IUSS Website (PUBLICATIONS).

Citation: Hurni H, Giger M, and Meyer K (Eds). 2006: Soils on the global agenda. Developing international mechanisms for sustainable land management. Prepared with the support of an international group of specialists of the IASUS Working Group of the International Union of Soil Sciences (IUSS). Centre for Development and Environment, Bern, 64 pp.

New IUSS book



"**The Future of Soil Science**" contains the views from some 55 soil scientists in 28 countries – from Finland to South Africa, from Canada to Ghana, Malaysia and China. The result is a palette of opinions and views reflecting great diversity but also several commonalities. It aims to feed the discussion of the pessimists ("pedology is dead and buried") and the optimists ("future for soil science is brighter than ever"), and makes background reading for the 18th World Congress of Soil Science in Philadelphia, USA. This book is compulsory reading for anyone interested in soils, the way that soils are studied, and will be studied in the future.

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PO Box 353, 6700 AJ Wageningen, The Netherlands. The Future of Soil Science / edited by Alfred E Hartemink (1964). Wageningen: IUSS International Union of Soil Sciences
ISBN 90-71556-16-6. €25

The book was freely available for participants of the 18th World Congress of Soil Science in July. Copies can be ordered and cost €25, send an e-mail to alfred.hartemink@wur.nl to order.

IUSS Divisions and Commissions - Description

1. Soil in Space and Time

- 1.1 Soil Morphology
- 1.2 Soil Geography
- 1.3 Soil Genesis
- 1.4 Soil Classification
- 1.5 Pedometrics
- 1.6 Paleopedology

2. Soil Properties and Processes

- 2.1 Soil Physics
- 2.2 Soil Chemistry
- 2.3 Soil Biology
- 2.4 Soil Mineralogy
- 2.5 Soil chemical, physical and biological interfacial reactions

3. Soil Use and Management

- 3.1 Soil Evaluation and Land Use Planning
- 3.2 Soil and Water Conservation
- 3.3 Soil Fertility and Plant Nutrition
- 3.4 Soil Engineering and Technology
- 3.5 Soil Degradation Control, Remediation, and Reclamation

4. The Role of Soils in Sustaining Society and the Environment

- 4.1 Soils and the Environment
- 4.2 Soils, Food Security, and Human Health
- 4.3 Soils and Land Use Change
- 4.4 Soil Education and Public Awareness
- 4.5 History, Philosophy, and Sociology of Soil Science



Division 1. Soil in Space and Time

Lay Description

Division 1 is the "What." It looks at the soil as a body and how it was formed, the extent of its global coverage, and the many complex interactions and interactions with the biosphere, hydrosphere, atmosphere, and lithosphere. This division focuses its attention on the "what" of the pedosphere and the extent of its current understanding. It is the medium and experimental material that is being investigated. It is why we are a Union of soil scientists in a common bond of interests.

Technical Description

Soils in time and space is a Division that deals with the "body" of soil in a landscape context. It quantifies pedogenic processes responsible for spatial diversity in soil cover with landscape, geomorphic and geographic patterns. It includes the scaling of soil morphology from micro to macro levels of generalization, calibration of morphology to pedogenic processes, and integration of this pedosphere knowledge with that of the biosphere, atmosphere, lithosphere, and hydrosphere. Only through the knowledge of morphogenesis is it possible to develop rational multiple working hypotheses of soil formation, soil chronology, soil morphology, and geographic distribution patterns. Without this linkage there is little opportunity to extrapolate our knowledge base on soil attributes beyond immediate locals where it was derived. Using a morphogenic bias, it is possible to catalogue and classify the population of soil attributes and generate multiple-use interpretations with spatial or tabular representations using GIS, and other state-of-the-science technologies.

Commission 1.1 - Soil Morphology

Soil is a continuous natural body that has spatial and temporal dimensions (soil cover or pedosphere). Primary organic and inorganic constituents are organized into secondary polyhedral structural units that in turn are assembled into vertical and lateral horizons that comprise soils unique to the environment under which they are formed. The morphogenetic properties that comprise soils are the essential elements of soil classification, interpretation, and land quality. They result from current and paleohistory of soil environments and in turn record many of the environmental signatures that result. Morphogenetic properties are dynamic and anisotropic in response to other state factor perturbations. The study of the soil cover structures develops knowledge about soil properties and dynamics; it permits the understanding of the genesis of the soil covers.

Commission 1.2 - Soil Geography

Soil geography is a study of the soil cover and its many morphogenetic attributes as a function of climate, geology, relief, vegetation, human activities, and history (natural and anthropogenic). It is that component of the division that serves as a vehicle to transfer soils knowledge gained in C 1.1, especially as it impacts ecosystem sustainability, food security, land carrying capacity, human health, and the global biosphere. Different types of maps, at different scales, represent soil distribution covers of significance to these utilitarian priorities and the field of soil science as a whole.

Commission 1.3 - Soil Genesis

This commission quantifies the fundamental physical, chemical, biological, and mineralogical processes (pedogenic) of gains, losses, translocations, and transformations occurring in soils from micro to macro scales to explain and understand profile formation. Utilizes fundamental knowledge gained from other disciplines to model dynamics and processes responsible for soil behavior at the landscape or ecological scale. This information is integrated with that of other scientific databases to quantify environmental interactions under which soils formed in both modern and paleo times.

Commission 1.4 - Soil Classification

Soil classification is that commission within the division that categorizes the infinite number of morphogenetic attributes of the pedosphere so the attributes used to classify soils permits the greatest number, most precise, and most significant statements about soil behavior and genesis. Classification systems are hierarchical so the knowledge base and interpretational inferences become more specific from the higher categories to lower ones. Taxonomic names are given to the categories and constituent classes so the relationships between soil attributes (horizons, pedon(s), cartographic units, generalized soil associations, soil covers, etc.) can best be remembered for a specific objective. Classification allows scientists to communicate and share knowledge about the "body" that soil scientist's study.

Commission 1.5 - Pedometrics

By pedometrics the Commission means the application of mathematical and statistical methods for the study of the distribution and genesis of soils. The goal of pedometrics is to achieve a better understanding of the soil as a phenomenon that varies over different scales in space and time. This understanding is important, both for improved soil management and for our scientific appreciation of the soil and the systems (agronomic, ecological and hydrological) of which it is a part. For this reason much of pedometrics is concerned with predicting the properties of the soil in space and time, with sampling and monitoring the soil and with modelling the soil's behaviour. Pedometricians are typically engaged in developing and applying quantitative methods to apply to these problems. These include geostatistical methods for spatial prediction, sampling designs and strategies, linear modelling methods and novel mathematical and computational techniques such as wavelet transforms, data mining and fuzzy logic.

Division 2. Soil Properties and Processes

Lay Description:

Division 2 is the "How" or the fundamental science behind our discipline, the understanding of fundamental processes.

Technical Description:

Division 2 is concerned with the integration of physics, chemistry, biology, mineralogy and pedogenesis to understand fundamental soil properties and processes that control transport, cycling, speciation and bioavailability of elements or molecules. These phenomena are studied at multiple scales ranging from global to atomic.

Commission 2.1 - Soil Physics

Soil physics deals with the physical properties of the soil, with emphasis on transport of matter and energy. Major research thrusts include modeling transport of inorganic, organic and microbial contaminants, fractal mathematics, spatial variability, geostatistics, computer-assisted tomography, and remote sensing of soil physical properties.

Commission 2.2: Soil Chemistry

Soil chemistry deals with the chemical composition, chemical properties, and chemical reactions of soils. Major research thrusts include: application of molecular scale in-situ techniques to elucidate aqueous and surface chemical speciation and mechanisms, kinetics of soil chemical phenomena; rhizosphere chemistry; organic matter structure; and soil chemical modeling.

Commission 2.3: Soil Biology

Soil biology is concerned with soil inhabiting organisms, their functions, reactions, and activities. Major research thrusts are carbon sequestration, nutrient cycling, microbial ecology, bioremediation, and molecular soil biology.

Commission 2.4 - Soil Mineralogy

Soil Mineralogy deals with all kinds of minerals occurring in soil environments especially rockborne and soilborne ones. Important soil processes like weathering and mineral neo-



formation are major tasks. The consequences of transport and biological turnover on minerals and their relevance to soil micro- and macro-structure is studied. The relevance of soil minerals and mineral-organic interactions are taken into account in relations to environmental and specifically soil fertility issues. Specific attention is given to the use of advanced analytical techniques to analyze mineral crystal structure, surface properties, and mineral-mineral as well as mineral-organic components interactions from the molecular scale up to the consequence for the landscape level.

Commission 2.5 - Soil chemical, physical and biological interfacial reactions

The Commission deals with abiotic and biotic interactive processes occurring in soil with the goal of advancing the understanding on physical/chemical/biological interfacial systems at the molecular to field/landscape levels. Major research thrusts include: (1) mineral and biological catalysis and enzyme-mineral interactions leading to humus and organo-mineral complex formation, (2) surface reactions of micro- and macro-biota and biomolecules with soil particles, (3) the effect of soil abiotic and biotic interactive processes on the structure, dynamics, and activities of microbial communities, and (4) ecological impacts of soil abiotic and biotic interactive processes on (a) porosity formation by structure or organization development and on (b) biogeochemical transformation and transport of chemical and biological components at different spatial and temporal scales.

Division 3. Soil Use and Management

Lay Description:

Division 3 is the "Why" it is important to society. It is the application of our fundamental knowledge to solve high priority social, economic, and environmental challenges of major societal and scientific interest. It can be considered the applied segment of science.

Technical Description:

"Soil Use and Management" is a Division which focuses on how we use the soil and how it links to the knowledge base of Divisions 1 and 2 in order to ensure that soils are used and managed in a sustainable manner. The Division is concerned with both soil use and management in terms of agricultural production, forestry, grazing lands, and the broader environmental context. Activities to remediate degraded soil, arising from the agricultural misuse of soil or contaminations resulting from non-agricultural activities are part of the scientific area of this Division. The aim of this Division is to ensure that through our knowledge and understanding of soil properties and processes and the distribution of soils within the landscape soils and soil quality are maintained and improved.

Commission 3.1 - Soil Evaluation and Land Use Planning

As soil is increasingly acknowledged as a scarce and finite resource it is essential that decisions related to soil(s) use(s) are optimized taking account of the nature and pattern of the soil and the socio-economic conditions at a variety of scales. Activities of this commission will encompass the broad activities of soil evaluation and land use planning and will include related activities of data gathering and management including remote sensing and Geographical Information Systems.

Commission 3.2: Soil and Water Conservation

This commission acknowledges that an essential element in many soil management strategies is the need to maintain the quality of the soil resource through appropriate soil and land management practices, including tillage. Frequently, the conservation of soil is intimately coupled with the management of surface waters through erosion control. In addition to the prevention of erosion by water and wind, this commission would also concern itself with the efficient management of soil water through irrigation, drainage and the limitation of water loss from the soil surface.

Commission 3.3 - Soil Fertility and Plant Nutrition

The management of soil fertility is a major activity of a substantial proportion of the world's soil scientists. The inclusion of plant nutrition in the title of this commission recognizes the often very close relationship between those managing soil fertility and those concerned directly with plant nutrition. This commission would concern itself with the identification of technologies appropriate to the particular soil conditions and combinations of soil conditions.

Commission 3.4 - Soil Engineering and Technology

This commission is concerned with engineering uses of soils both in the agriculture and non-agriculture context. Soil serve many purposes such as road beds and fill material they are shaped and changed for many uses, used for filter fields, sewage and waste storage etc.

Commission 3.5: Soil Degradation Control, Remediation, and Reclamation

Many soils of the world are degraded, both because of agricultural activity and through the pollution arising from urban, industrial activity, and other human activities. The purpose of this commission is to use our knowledge and understanding of soil properties and processes to ensure that damaged/degraded soils may be remediated or reclaimed and returned to productive use.

Division 4. The Role of Soils in Sustaining Society and the Environment

Lay Description:

Division 4 is more generalized and entails the transfer and outreach of our knowledge base to segments of our society where soils and soil science are frequently misunderstood or sometimes under appreciated. It takes the soils information generated in the other three divisions along with developing new scientific information and addresses public literacy in soil science, education, international conventions, consequences of human activities on soil ecosystems, policy issues, food security, history of the discipline, etc. This division might be considered the "capstone" division because it must integrate our scientific body of knowledge so scientists, policy makers, and those specialists remote to soil science may become more informed about the utility of this most essential natural resource at the Earth's surface. It is the scientific entity that interacts well beyond traditional bounds.

Technical Description:

There is a need to provide soil science input in many policy-related topics addressing environmental and social concerns. This Division will provide the soil science input in the decision-making process and 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.

Commission 4.1 - Soils and the Environment

This Commission will look at the soil as part of the ecosystem. Human activities have a strong impact on the ecosystems and the soil and environment interactions in relation to humans are particularly important. Soils, are a major component of the biosphere at the interface between the lithosphere, atmosphere and biosphere, are investigated through several international programs such as IGBP; in the same way, the soil plays a considerable role in the carbon sequestration (UN Convention on Climate Change) and is the habitat for a number of species covered by the Biodiversity Convention.

Commission 4.2 - Soils, Food Security and Human Health

Soils are the essential for food production in most countries. Considering that one third of the land area is presently used for agriculture, and the world population is increasing, creating additional pressure on agricultural land, providing enough safe and nutritious food will be an ongoing challenge. Among the concerns of this commission, there is the



maintenance and conservation of agriculture lands, the role of soils in a changing world in relationship to human health.

Commission 4.3 - Soils and Land Use Change

Soils play a large role as source and sinks of greenhouse gases. In a context of global sustainability, this Commission will investigate how the source/sink function of the soils can be managed and controlled to mitigate the impact of climate change. Land use change is of a major interest to all, what is the effect of urbanization, lost of productive land to other uses, forest conversion, and other changes are of major interest and these changes will fall under this Commission.

Commission 4.4 - Soil Education and Public Awareness

This commission deals with how we present knowledge teaching and the development of soil scientists as well as anyone interested in soils from a learning standpoint and the information we give to create a general public awareness of soils. A well informed public is needed so that the importance of soils is understood by all.

Commission 4.5: History, Philosophy, and Sociology of Soil Science

This commission deals with our past; it links the study of what has happened in history and how soils can be used to help explain the past changes. This commission is not just a record of the history but the use and understanding of soils information and its relationship to human development and history.

News from Commission 1.1 Soil Morphology and Micromorphology

An Intensive Training Course on Soil Micromorphology is being offered in Barcelona, 8-19 January 2007; for 6 credits (60 lecture-hours). Participants are encouraged to bring their own thin sections for study and observation if they wish. For more information see the web site: <http://www.giga.ub.edu/acad/npost/fixes/3/200511200.php> or contact a member of the organizing committee:

Prof. Dr. Rosa M. Poch UdL (co-director) rosa.poch@macs.udl.es

Prof. Dr. Àngels Canals UB (co-director) angelscanals@ub.edu

Prof. Dr. Georges Stoops UG

IUSS Commission 1.1 Soil Morphology and Micromorphology is pleased to offer a New Award: The Young Micromorphologist's Publication Award. It will be awarded every 2 years: at each International Working Meeting on Micromorphology, and at each World Congress of Soil Science. The purpose of this award is to encourage and promote the use of soil micromorphology by young scientists. The award will be given to one or more young scientist who has published research in the preceding 4 years, that is an outstanding contribution to the principles, methodology, or application of micromorphology. The author must be less than 35 years old at the time of acceptance of the publication, and he/she must be the first author. The paper must be published in an international journal with wide distribution, but not necessarily a scientific journal. The award is not restricted to papers published in the English language only. The selection of the awardees will be the responsibility of the Kubiena Award Committee. Applicants should submit the following: (1) a pdf file of the paper(s) to be considered for the award, (2) proof of age for eligibility, (3) a cover letter explaining why they should be considered for the award. Letters of support from senior micromorphologists, outlining the qualities of the publication(s) are also welcome. Applications are due April 30, 2008 for the 1st award which will be presented at the 13th International Meeting on Soil Micromorphology, Chengdu, Sichuan Province, China. Send applications to Dr. Brenda J. Buck, Chair, Commission 1.1, Dept. Geoscience, UNLV, 4505 Maryland Parkway, Las Vegas NV 89154, USA.

Brenda J. Buck.
Chair, IUSS Commission 1.1, Las Vegas USA

The Official Name of IUSS Commission 2.5

I am pleased to report that, at the last Council meeting at the 18th World Congress of Soil Science in Philadelphia, the International Union of Soil Sciences (IUSS) has approved the official name of the newly created IUSS Commission 2.5 as "Soil Physical/Chemical/Biological Interfacial Reactions". The Mandate and major research thrusts of this new Commission 2.5 are as follows:

The Commission deals with abiotic and biotic interactive processes occurring in soil with the goal of advancing the understanding on physical/chemical/biological interfacial systems at the molecular to field/landscape levels. Major research thrusts include: (1) mineral and biological catalysis and enzyme-mineral interactions leading to humus and organo-mineral complex formation, (2) surface reactions of micro- and macro-biota and biomolecules with soil particles, (3) the effect of soil abiotic and biotic interactive processes on the structure, dynamics, and activities of microbial communities, and (4) ecological impacts of soil abiotic and biotic interactive processes on (a) porosity formation by structure or organization development and on (b) biogeochemical transformation and transport of chemical and biological components at different spatial and temporal scales.

It is hoped that this integration of knowledge on soil processes and properties and the impact on ecosystem integrity and human welfare would lead to "Quantum Leaps" in Soil Sciences for years to come.

P. Ming Huang
Past Chair
IUSS Commission 2.5

Linkage between the IUSS and the International Union of Pure and Applied Chemistry (IUPAC)

I am pleased to report that the official linkage between IUPAC and IUSS has recently been established. I have been appointed as IUPAC Representative to IUSS. IUPAC is a learned international organization, is a full Union Member of the International Council of Scientific Unions (ICSU), and advances the worldwide leading role of chemical sciences for the benefit of mankind.

Therefore, establishment of the long-term official linkage between IUPAC and IUSS is considered vital in promoting and facilitating the communication and cooperation of pure and applied chemists with soil scientists in ensuring food security, quality and safety and protecting the environment and ecosystem health including human health on the global scale.

The IUPAC has recently approved the creation of a new IUPAC-sponsored Wiley book series entitled Biophysico-Chemical Processes in Environmental Systems. This series addresses the fundamentals of physical-chemical-biological interfacial interactions in the environment and the impacts on: (1) the transformation, transport, and fate of essential nutrients, inorganic and organic pollutants and pathogens, (2) food chain contamination and food quality and safety, and (3) ecosystem health including human health. In contrast to the classical books which largely focus on separate physical, chemical and biological processes, this book series is unique in integrating the frontiers of knowledge on interfacial interactions of physical, chemical and biological processes in nature. For your information, attached please find a one-page brochure on this series.

P.Ming Huang
IUPAC Representative to IUSS



Report of the Business Meeting of the IUSS Working Group WRB

The meeting (held at the 18th WCSS) was well-attended; some 60 – 70 persons were present. Erika Michéli, Chair of the Working Group WRB, opened the meeting and highlighted the past activities

Correlation tours and meetings

- Arid Soils Tour, South Africa – Namibia 2003; to study desert soils, in particular the Durisols that were introduced in 1998
- Paleopedology, Italy 2003: to study the use of WRB in paleopedological studies
- WRB Trans-Ural Polar Tour, Russia 2004: to study Cryosols and their intergrades. Cryosols were first introduced in the Draft WRB 1994 and their definition has steadily been expanded.
- 2nd International Soil Classification Conference, Petrozavodsk, Russia, 2004: one session of this conference was dedicated to WRB. *Eurasian Soil Science* has published a number of papers in a supplement to Volume 38 in 2005.
- East African Soil Correlation and Land Evaluation Meeting, Tanzania – Kenya (FAO organized), 2005: to study tropical soils and familiarize East African soil scientists and soil surveyors in the use of WRB
- Ghana 2005: to study tropical catenas and the effects of animal activity in soils and how this may affect WRB
- Mexico 2005: to study volcanic soils, tepetates and tropical mountain soils
- Unfortunately, the WRB representative could not participate in the Cryosol meeting in Archangelsk, August 2005, because of family reasons

Training

The Joint Research Centre of the European Commission in Ispra, Italy, organized three Summer Schools on Soil Survey between 2003 and 2005. A fourth one will be held during the summer of 2006. A significant part of these summer schools is dedicated to the introduction of WRB, especially for the Newly Acceded States. In 2002, 2003 and 2005, training courses (in Spanish) were organized in Mexico for Latin America Forest research groups in Europe were trained in Germany in the use of WRB in order to harmonize their findings.

Newsletter

A number of newsletters were issued, reporting on meetings and correlation tours, useful hyperlinks, and other matters concerning WRB. Of late, very few newsletters were issued as most of the time was consumed in preparing the WRB 2006 edition (see below).

WRB 2006

For the 18th World Congress of Soil Science a new edition of WRB was prepared. The new edition is issued, like the previous one, as a World Soil Resources Report of FAO, one of the three institutions supporting WRB (the other two being the IUSS and ISRIC). Details on the main changes and additions are given under agenda item 2.

Harmonization

A large effort was made to harmonize the use of nomenclature and definitions between WRB and Soil Taxonomy, especially with the assistance of the Natural Resources Conservation Service of USDA. The WRB group is particularly indebted to Bob Engel (NRCS, Lincoln, NE) who patiently wrote and re-wrote definitions and gave essential background information on how and why Soil Taxonomy uses its definitions. The harmonization exercise has resulted in much more similar and less dissimilar definitions. In case of strong dissimilarity, new names to diagnostic features were coined to avoid confusion.

At the end of her presentation, Erika announced that she steps down with immediate effect as Chair of the Working Group. For the sake of the meeting, she agreed to continue chairing until a new Chair was elected.

Otto Spaargaren gave a brief overview of the main changes and adaptations in the 2006 edition of WRB (in fact this was also part of his presentation during the WRB symposium on the morning of July 13). The main changes are:

The object we classify in WRB: Any material within 2 m from the Earth's surface that is in contact with the atmosphere, with the exclusion of:

- Living organisms
- Areas with continuous ice not covered by other material
- Water bodies deeper than 2 m
- The lateral dimension of the object classified should be large enough to represent the nature of any horizon and variability that may be present.
-

Two new Reference Soil Groups

Technosols – to cover soils in urban areas, industrial complexes including mine areas and soils contaminated with extraneous material; key out after the Anthrosols

Stagnosols – to cater for soils with temporary water saturation at the surface not induced by an abrupt textural change; key out after the Planosols

Changes in sequence of RSGs in the Key

Cryosols: key out after Histosols, Anthrosols and Technosols

Solonetz: key out after the Fluvisols

Nitisols: key out before Ferralsols

Arenosols: key out before Cambisols

Logical sequencing of qualifiers

Prefix qualifiers – typically associated qualifiers and intergrade qualifiers

Suffix qualifiers – other qualifiers:

- diagnostic horizons, properties or materials
- chemistry
- physics
- mineralogy
- surface characteristics
- texture, including coarse fragments
- colour
- others

Harmonization of terminology and simplification

review of definitions to avoid confusion with other classification systems, e.g.:

- in WRB 1998 the *cambic horizon* was defined different from the *cambic horizon* in Soil Taxonomy, mainly because of the textural requirements; in WRB 2006 the two are now almost identical

where differences remained, other names were coined, e.g. the WRB 1998 *sulfuric horizon* is renamed *thionic horizon*

the *ochric horizon* has been deleted as it was not diagnostic for any of the Reference Soil Groups nor was it used to define one of the qualifiers; the *hyperochric* qualifier has been retained to cater for the special surface layers in Southern Africa but is defined on its own

Freddy Nachtergaele expressed FAO's view on the progress made with WRB. He was very pleased with the result so far and stated that FAO will continue to support WRB by maintaining the website and assisting translations to permit wider use of WRB. Already 5 translations of WRB 2006 are underway: Arabic, Russian, French, Spanish and German. He also noted the integration of WRB in the newly issued fourth edition of the FAO Guidelines for Soil Description, the possible linkage to the FAO Topsoil Classification (still available only in draft format), and the update of the Lecture Notes on the Major Soils of the World that FAO also supports.



He also came with a note of warning: soil science as such is on the trail. In the Millenium Ecosystem Assessment, soil is not more than a footnote. Moreover, soil expertise may disappear from FAO in the years to come.

Peter Schad looked ahead to the period 2006 – 2010.

Vacancy WRB Chair. After Erika's stepping-down, a new WRB Chair had to be elected. He proposed Otto Spaargaren to fill the vacancy. There were no other candidates coming forwards from the audience, and the meeting elected by acclamation Otto as the new Chair of WRB for the period 2006 – 2010. Peter Schad will continue as Vice-Chair.

Lecture notes on the Major Soils of the World. There is an urgent need for update of this publication and accompanying CD-ROM. This will be one of the priorities of the WRB Working Group. Otto will contact the original composers of the CD-ROM (Dutch students) to seek their assistance for the update.

Meetings. Peter surveyed the audience for possible candidates to organize the annual WRB meetings and field tours. The following options were proposed:

2007: Spain, Tenerife, organized by La Laguna University. After meeting two more options arose for 2007: a field tour to Finland and the Baltic States (Gleysols and Stagnosols), and a field tour in Southern Germany, organized by the University of Hohenheim, focusing on Technosols and Stagnosols.

2008: Poland, organized by the Copernicus University, Torún

2008: Mexico, organized by the Universidad Nacional Autónoma de México

2008: Tanzania, organized by Sokoine University, Morogoro

2009: USA, New York, organized by the New York City Soil Survey, with special focus on Technosols

Moreover, members of the WRB Working Group will actively participate in other meetings and act as resource person on WRB during such meetings.

Training. The WRB group will continue its training activities. The fourth European Summer School for Soil Survey in 2006, organized by JRC, Italy, will be the next training activity.

Translations. Translations of WRB documents are strongly encouraged (and supported by FAO) in order to provide wider access to WRB in national languages.

WRB Task Force. Otto announced the establishment of a WRB Task Force comprising the Chair (also representing ISRIC) and Vice-Chair, Erika Michéli as representative of the IUSS Commission 1.4 on Soil Classification (In the meantime, Erika Michéli has been elected Vice-Chair of this commission), Neil McKenzie (Deputy Chief of CSIRO Land and Water, Australia) as liaison for the next World Congress of Soil Science in Brisbane, and a representative of FAO (to be nominated by FAO). The task force will coordinate the activities, continue the process of harmonization with other systems of soil classification, support and assist in the use of WRB world-wide, act as clearing house for new proposals, and ensure firm embedment of WRB during the next congress.

During an interval of the meeting, the new Chair announced the winners of the WRB poster contest. These were:

- First price: Martin Fey (South Africa) for his poster on: *Grouping and Naming Soils in the South African Classification*; price: Soil Atlas of Europe (made available by JRC, Italy) and the DVD with Soil Maps of Africa (made available by ISRIC)
- Second price: Luise Giani and Hans-Peter Blume (Germany) for their poster on: *Formation, Properties and Distribution of Singular Deep-Ploughed Soils of Central Europe and Recommendations for WRB*; price: Soil Atlas of Europe

Erika Michéli, Peter Schad, Otto Spaargaren
Gödöllő, Freising, Wageningen
July 2006

Today's Soil Science

Recent discussions of furthering the use of soil science for human and environmental concerns, for example at the last World Congress of Soil Science, have established general agreement among soil scientists on several points:

1. The need to shift our thinking more toward the environment and ecosystems, away to a greater extent from the agronomic paradigm.
2. The need to concentrate on soil science contributions to multi-discipline studies.
3. The need to communicate soils information to policy makers and decision makers.
4. The need to burnish the soil image and to increase the understanding of soils knowledge among a public concerned with resource uses.
5. The need for new and broader future concepts of soil science, in addition to applying more technology to solution of specific continuing problems.

The very useful compendium, assembled by Hartemink (2004a) on views by soil scientists of the future of soil science, raises these issues. We are agreed that we need more success in getting our messages to our audience. How we define soil science is among the questions we need to ask ourselves.

Are we defining and explaining soil science in ways that further the accomplishment of these needs? We still use statements such as "soil is a mixture of minerals of various sizes and organic matter." We then continue our definition by dividing the sizes of coarse particles into six fractions, leaving the active components of soil in broad, undifferentiated categories of organic matter, clay, and silt. But the activity resides in the clay-organic complexes.

Is it not the pores that are much more important in defining the characteristics of soils for ecological functions including plant growth? Is it not that vital, though very incompletely understood, tight complex of disintegrated organic molecules and mineral surfaces that leads to the properties that allow us to use the term "living soil"? Is ease of measurement still driving our definitions and concepts of soil? Would terms focused on processes, biological, chemical, and physical, be more easily grasped by the broad range of soil users? Hartemink (2004b), in his perceptive essay, has indicated one way toward this. He asked how soil science would look if it were started today. "Perhaps we would come up with a whole new set of differentiating properties..." Shall we try?

We could simplify our definition and concept of soil for the broader audience. I suggest that a concept and definition of soil based on the role of soil in ecosystem functions would be more understandable by that audience. I believe that a broader concept would help our thinking about the role of soils in today's issues. I include the important role of supporting plant growth and the soil responsibility of food production as well as other applications. Nieder (2004) has a good definition: "Soil is...(the) life sustaining, biologically active, porous and structured medium at the Earth's surface formed by...(inorganic and organic) particles, air and living organisms." I quote his definition with slight changes that appear in brackets, ("the") for "a" and ("inorganic and organic") for "mineral particles, organic matter." This is a good, short definition, I like it. Nieder (2004) then continues with elaboration and examples.

Soil is a living body performing functions of bio-geo-chemical recycling, buffering, biological habitat, and water cycling that no other components of ecosystems perform. It is a central earth science. We need to think about soils from the "inside out," rather than from the "shell in." The Chinese philosopher Laotse (6th century BPE) stated that "The reality of the Building does not consist in roof and walls but in the spaces within to be lived in." We could use this as a soil scientists' motto. The essence of soil consists of the spaces where things happen, not of the skeleton.

In this emphasis soil physics concentrates on nature of pores and their stability rather than gross bulk density, chemistry on the bio-geo-chemical cycling rather than specific surfaces, and biology on the niches of biological activity rather than the specific organisms. This does not denigrate the more basic soils studies required to understand these processes, but it helps in asking the questions. What are the core characteristics defining soils? The structure or architecture is one, as are horizonation, energy cycling in soils, chemistry of decomposition of organic matter and minerals, and nature of the mineral-organic complex.



Each application would require an elaboration of specific characteristics. All these questions are complex and applications of the answers are difficult, but it may help to pose the questions differently.

A small step, but maybe by thinking differently about "what is soil," we can more profitably think about ways of fulfilling the needs listed in the first paragraph?

Benno Warkentin
September 2006

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Letter to the editor of the IUSS Bulletin

During the last IUSS congress of Philadelphia 2006 I had the privilege to convene the works of the Commission on Paleopedology and that of the session titled "soil, wine and other quality crops". While the reader of the IUSS Bulletin can find on the Paleopedology Commission home page the complete report of the activities held at Philadelphia (http://fadr.msu.ru/inqua/past_meetings.html) I would like here to put in relationship the interesting conclusions coming from the bulk of works and debates held at the session on soil and wine, with the actual situation of soil science in the developed countries, and especially in Italy, so as to share some considerations of mine.

The works presented in the session clearly depicted the image of the role that soil science can play in an agriculture focused on quality, more than on quantity of goods. According to the participants to the session, this can be the future of soil sciences in the developed countries, where food is no longer the main issue towards which soil sciences are addressed and where funds for soil sciences are always less, year by year. Italy, in this respect, has a privileged viewpoint. It has never had a national soil service. Permanent positions of soil scientists inside universities and research institutions have always been rather few; at most of couple hundred, including all branches of soil sciences. On the other hand, in the last ten to fifteen years, some small, but often dynamic soil bureaus have been created inside many regional administrations, and the number of well trained pedologists has been increasing. In addition, many people have been hired by institutions for limited periods of time, on a project basis. It is a situation which envisages the future of soil scientists in most developed countries. The key words are flexibility and project oriented.

What are the consequences on the activity of soils scientists? What are the projects which involve soil scientists?

Basic aspects of soil sciences are seldom financed "per se"; actually the major part of the basic research is carried out on projects with applied purposes. Thus fewer applied projects are only related to soil sciences; rather they are commonly putting together with different disciplines. Soil science can play a major role in them, or not, however, it always gives key information to the other disciplines. The future of soil science just stands on the capacity of soil scientists in convincing people that the information about soil is not only important, but also needs an in-depth knowledge, which can not be achieved with other, more superficial approaches.

There is a long array of examples which can illustrate the key role played by soil studies to bridge different disciplines. Hydopedology is a good example, which has been well illustrated in the volume "The Future of Soil Science". I would add paleopedology, bridging soil sciences with earth sciences (geology of Quaternary, geological mapping, neotectonic,

and hydrogeology, among others) and with human sciences (archaeology and cultural heritage).

But in this short comment I would rather stress the role that soil sciences can play in reconciling agriculture with the environment and society. In fact, in Italy, as well as in many developed countries, agriculture is nowadays often seen as a driving force of land degradation. This view has increased since the advent and diffusion of the so-called "unattended" and "free time" agriculture. The former refers to the medium-large and large farms, which utilize high economic inputs and few workers, who are essentially involved in the productive process. The latter constituted by micro-landowners who occupy the rural spaces of settlements and infrastructures, but gravitate upon the city, and use agriculture as an essentially leisure-time activity. From the point of view of the rural territory transformation and agricultural social development, what we have is the progressive disappearance of the traditional farmer way of life, with the constant presence of man on the land and his awareness of the importance of soil conservation practices. Among the consequences, we come up against a progressive transformation of the landscapes, where the most traditional ones are gradually disappearing. The modern model of land use, designed to suit agricultural machinery, has been generally applied, without considering soil properties and in many cases it has impaired soil qualities, e.g. water pollution and runoff regulation. Since agricultural production systems have sometimes resulted in excessive soil degradation, there is a need for crop production in harmony with soil conservation and environmental protection. Soil managements are sustainable only if they are compatible with the expectations of the farmers and if their influence on the environment is such that they can be practiced indefinitely without undesirable consequences.

Here comes the main conclusion of the session on soil and wine. We think that the "terroir" concept can be taken as a reference to harmonize the different productive, environmental, cultural and social soil functions. The word "terroir" was born in France viticulture, before being used for all quality crops. Terroir means a trait of land where the oenological result of a specific variety is determined by well defined environmental conditions, such as microclimate and soil fertility, through a well tuned agricultural and oenological technique. The rationale is based upon the observation that environmental factors influence the hormonal equilibrium of each plant variety. This in turn regulates the expression of the genotype, and therefore the quantity and quality of the harvest. But the components of terroir are not only physical and technical, but are also the human ability, the aesthetic value of the landscape, and some still intangible factors conveyed by the bottle of wine to the consumer. Over the last decade, the concept of terroir has been extended to several quality crops, becoming the tool by which is possible to discover the mosaic of terroirs which forms the quality of the foods of a region. Terroir is soil conservation, the preservation of culture and values, and the way of living of farmers.

Soil scientists, through the cooperation with agronomists, oenologists and other specialists, can play an important role in pairing soils and wine grape production and other quality crop systems. This pairing may result in better economic, environmental and landscape sustainability. This approach, which can be called "site-specific agriculture", can contribute to specific guidelines suitable for specific soil types. This can help develop an economically and environmental friendly agriculture and to increase the number of environmentally conscious farmers.

The increasing public expectation for "total quality" agriculture that sustains production, while at the same time maintaining the quality of the food products, the environment and the landscape, creates an exciting opportunity for soil science consultants and researchers. Soil science societies are called to encourage the presence of studies and activities correlating soil characteristics with sensory crop quality in their congresses and journals.

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Eupedology: A Solution to a Controversy

Introduction

The following is a shortened version of the article "*Soil Science: unde venis et quo vadis?*" (Bech. J, 2006), which submitted a proposal to end the recurrent controversy or misunderstanding concerning soil science versus pedology.

Historically, there is more support showing that soil science and pedology are synonyms than for the new, restrictive, unjustifiable view that pedology is merely a branch or subdiscipline of soil science, as some authors propose.

I understand the desire of some soil scientists to highlight differences between their speciality in terms of the study of soil genesis, classification and geography (formerly Commission V of ISSS and currently, the First Division of IUSS) and other branches of soil science (i.e., soil chemistry, soil biology, fertility, etc.). This is not new; in 1950 del Villar stated and proposed the name of geodaphology (= geopedology) for this "new branch". Although the zeal of some soil science specialists to delimit their speciality is understandable, however, it does not appear to be consistent with classifying it with the same designation of pedology, a synonym of soil science, for one century. I feel this would only be a root of confusion, something that should be avoided. Hence, my article proposes the name of *eupedology* for this subdiscipline.

Identity of soil science or pedology

One widely accepted definition is:

Pedology is the science of soil (from the Greek *pedon* = soil and Greek *logos* = science) in all its aspects: genesis, nature, composition, peculiar structure, time-space dynamics and properties (mineralogical, physical, chemical, biogeochemical, biological, microbiological, morphological, classification, geographic distribution, ecology, fertility, quality, conservation, degradation, pollution, erosion, etc.

In 1909 in Budapest, the new science –Pedology–was defined as "the soil study in all its complexity, in view of the close connection between all over agronomic qualities of this soil and its genesis and environmental conditions". Later, Lozet and Mathieu (1986) also mentioned *pedology* and *soil science* as synonyms: "Science that studies the physical, chemical and biological characteristics of soils and their evolution". Moreover, the Oxford English Dictionary 1992 specifically defines *pedology* as the science of soils, etc. (See below.)

Nevertheless, I think we should recall several historical facts:

Some historical dates in soil science

One of the first terms used to refer to the science that investigates soils was the German word *Bodenkunde* (von Hundeshagen, 1813, 1830; Krause, 1832). This expression was later used by Carl Sprengel (1837) in *Die Bodekunde oder Lehre vom Boden Leipzig*.

In 1862 A. Fallou introduced the word *pedology* as a synonym for soil science in *Pedologie oder allgemeine und besondere Bodekunde*.

When Dokuchaiev's *Russian Chernozem* was published (1883), modern soil science or pedology (*pochvovedenie* in Russian) was born. Sibirtzev presented a report on pedology at the International Congress of Geology in St. Petersburg (1897) and his work "Pochvovedenie" (Pedology) was published posthumously in 1900.

In 1899 a journal entitled *Pochvovedenie* (pedology or soil science) was created, and in 1901 Jarilov published his work *Pedology*.

The First International Agrogeological Conference of Budapest held in 1909 in fact focused basically on the topic of pedology or soil science (Szabolcs, 1997).

The Second International Agrogeology Conference was later held in Stockholm, where it was agreed to publish the *International Reports on Pedology*, which was issued in 1911 in German, French and English (*Internationalen Mitteilungen für Bodenkunde, Revue Internationale de Pédologie*).

The Third International Conference was held in Prague (1922), using the term *pedology*, and five international commissions were established at the conference:

- 1) Mechanical Analysis and Soil Physics
- 2) Chemical Analysis
- 3) Bacteriological Analysis
- 4) Nomenclature of Soils
- 5) Soil Mapping

Please note that *pedology* was a synonym of the terms *soil science*, *bodenkunde* or *pochvovedenie*, as the word covered the study of soil genesis and classification, as well as soil microbiology, chemistry and soil physics.

At the Zurich meeting held in 1923, the International Committee of Pedology (AIP, Association Internationale de Pédologie) was postponed until the "International Association of Pedology" was founded in Rome, where the IVème Conférence Internationale de Pédologie was held in 1924 with the participation of six commissions:

- 1) Soil Mechanical Analysis and Soil Physics.
- 2) Soil Chemistry Research
- 3) Soil Microbiology and Biochemistry Research
- 4) Soil Nomenclature and Classification
- 5) Soil Mapping
- 6) Soil Science and Plant Physiology

Others participated in the Rome Conference, among them the microbiologists Waksman, Lipman, Stoklasa, etc., soil chemists (e.g., Wiegner) and still other experts in fertility. Analogous to the Prague Conference, this is clear evidence that pedology was truly soil science. The idea that the word *pedology* would be changed to *soil science* (since the latter was considered more appropriate and less restrictive) first appeared in a text of three lines *Actas IV International Conference of Pedology-Roma 1924*). However, further evidence that these words were used as synonyms can be found in the *Lectures*, and in fact, *The Proceedings*, a 1805-page document, repeatedly used the terms "soil scientists or pedologists" and in the *Actes or Proceedings*, the term *Pédologie* is always translated into English as soil science (see pp. 659-660).

In the closing sessions of the Rome Pedological Congress (1924) several proposals were made. For instance, Hissik (General Secretary) asked for the creation of a pedological bureau at the International Institute of Agriculture of Rome. This proposal was enhanced by two petitions made by President G. de Angelis d'Ossat:

1. Create a pedological section in the Journal of the International Institute of Agriculture.
2. Found an International Institute of Pedology, housed in the International Institute of Agriculture in Rome. These examples from the *Proceedings of The IV Conference Pédologique Internationale de Rome* explain the synonymous use of soil science and pedology.

This strange and unexpected decision contradicts both the content of the four preceding conferences and that of the 1st Congress in Washington (1927). In Rome, Frosterus, Wolff, Marbut and Lipman wrote about the "next Congress of Pedology" In contrast, Del Villar (1926) stated in 1927, "the Fifth International Congress of Soil Science will be held in the U.S." and even the official invitations issued by the U.S. president, Calvin Coolidge, (p. 6, 8, 9, vol ICSS Proc. Transcont. Excursion) said that, "In accordance with the decision of the Fourth International Conference of Soil Science that met in Rome... the President ... extended invitations... at the Fifth International Conference of Soil Science..."

At the Washington congress, Rice wrote, "...soil science or pedology..." and Glinka also referred to soil science or pedology (p. 116, I Proc.). Other Russian delegates such as Tuilakov, Lebedeff and Afanasieff used the terms soil science and pedology indistinctly (using "Russian pedology or Russian soil science").

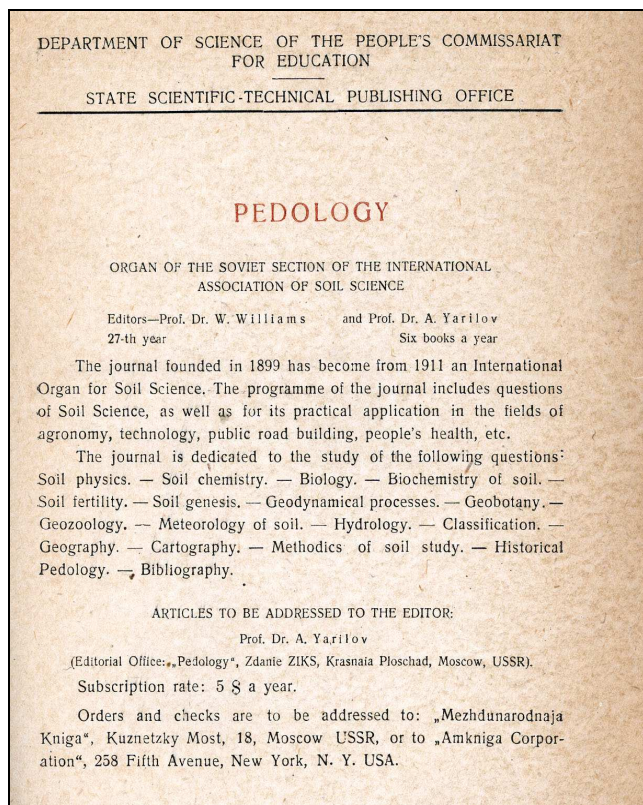
These are just a few examples of synonymous usage of *pedology* and *soil science* and therefore, the continuity of the concept between the congresses held in Rome and Washington.

The Russian Journal of Soil Science *Pedology* was published for many years and included articles on soil physics, chemistry, biology, biogeochemistry and fertility, as well as soil genesis, further evidence that soil science and pedology are indeed synonyms. (refer to Fig.)



The book *Pedology* authored by Joffe (1936) played an important role in the consideration of pedology as a branch of soil science.

There is some contradiction between the Joffe's opinion on pedology and one of the reports to the Rome Conference, which discussed the use of applied chemistry to correct saline soils, a topic which is neither genesis nor classification.



The Russian Journal of Soil Science "Pedology" (Pedology 1932, No. 3)

Furthermore, according to the authors of *Soils and Men* published by the U.S. Dept. of Agriculture (1938), pedology is the science that treats soil. Kellog (1941) spoke of pedology or soil science, whereas Albareda (1944) used the terms "*edafología*", "*pedología*" and *soil science* as synonyms

In 1947 contributions from soil science (genesis, classification, chemistry, fertility, etc.) were presented at the "Congrès Internationale de Pédologie Méditerranéen" (Montpellier).

There are a number of prestigious authors who simply failed to consider or have refuted the idea that pedology is a "branch or subdiscipline" of soil science, among them, Wilenskii (1957), Moss (1959), Tiurin (1960), Gerasimov and Glazovskaya (1960), Wilde (1963), Margulis (1963), Smith (1965), Tavernier (1965), Duchaufour (1965-1995), Simonson (1968), Gaucher (1968), Kovda and Dobrovolski (1974), Kovda (1984), Schroeder (1984), Lozet and Mathieu (1986), Boulaïne (1989), Krupenikov (1993), Reffega (1999) Ziller Marcos (1999), etc.

Moreover, several national soil societies refer to pedology, i.e., Société Belge de Pédologie, Slovakian Pedological Societas. On the other hand, journals with a long history, such as *Pedology* (Russia), *Pédologie* (Belgium), *Cahiers O.R.S.T.O.M. Ser. Pédologie* (France), *Acta Pedologia Sinica*, *Pedosphere* (China) etc. with activities and papers that refer not only to soil genesis, classification and mapping, but also to all aspects of soil science (soil physics, soil chemistry, soil biology, fertility, etc.).

Again, in the program of the 13th WCSS the equivalence between soil science and pedology is categorical.

Several authors identify pedology as "pure" soil science (Itano, 1927) or the "heart" (Arnold) or "hard core" (Simonson 1991), even stating "Pedology is soil science *dans sa plénitude*" (Pedro, 1984).

How can we possibly imagine that the "core" of a body of science is actually a "branch"? It is simply not appropriate to pigeonhole the main trunk as a branch or subdiscipline. Pedology includes all the subdisciplines of soil science.

Proposal to end the controversy: Eupedology

I would like to propose that *soil science* and *pedology* are obvious synonyms, but perhaps some kind of reconciliation could be obtained by using the term *eupedology* to refer to soil genesis, morphology, classification, mapping and geography (formerly Commission V of the ISSS, now Div I of the IUSS).

The term *eupedology* (neologism coined by the author [from the Greek *eu* = good, well, true]) to avoid the misuse of the term *pedology* or *soil science* to refer to a branch or subdiscipline of itself, a term that will be consistent with scientific logic and the history of soil science and would enhance the credibility and identity of our science.

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International Year of Planet Earth

Following UN Resolution 60/192, proclaiming 2008 as the UN Year of Planet Earth, for the first time ever, the geosciences will be placed in the focus of political attention by all 191 UN nations. By that Resolution, all nations are invited to report on what they have done to apply the geosciences in local, national and international decision making. The UN Year (2008) will be the central year in the triennium 2007-2009 designated as the lifetime for the *International Year of Planet Earth*.

Soils are fully addressed in the Year's Science Programme. The Science implementation Team on Soils, chaired by Dr. Alfred Hartemink, consists of eight internationally renowned members.

The International Year of Planet Earth will dominate all outreach and public awareness activities for the geosciences *sensu lato* during the last part of this decade. This has been well understood by geoscience communities around the world. As of today, 25 countries have already created a National Committee for the Year of Planet Earth: Australia, Austria, Bulgaria, Canada, Czech Republic, Estonia, France, Germany, India, Iraq, Ireland, Italy, Japan, Lithuania, Malaysia, Mongolia, Namibia, New Zealand, Peru, Romania, Spain, Sweden, Switzerland, Tanzania and the UK. Many more countries are in the process of creating such committees, including Argentina, Brazil, Chile, China, Norway, Poland, Russia, and the USA. We have been gratified to see much enthusiasm, and exciting ideas, among the members of these committees.

Germany's national Year for the Geosciences in 2002 was successful in mobilizing about one million people into the exciting and socially useful aspects of our science. Moreover, in 2003, the flow of geoscience students into German universities doubled, trebled or even (in one case) quadrupled!

The International Year of Planet Earth builds on that success and on that of the International Geophysical Year (1957-1958). As to raising public awareness, we believe that the International Year of Planet Earth will be the single most important event for the



geosciences worldwide. Therefore, we encourage the creation of National Committees in as many countries as possible and to invite soil scientists to play a role in these.

Now, we have a once-in-a-lifetime chance to make a big leap forward. As success can only be guaranteed if sufficient funds would be available, we invite readers of this Bulletin to assist us in the fund-raising process, for example by identifying potential sponsor and Partner organizations and individuals. For more information, please check www.yearofplanetearth.org

Five Questions to a Soil Scientist

Five Questions to Eswaran Padmanabhan

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1. When did you decide to study soil science?

After graduating with a Bachelor's degree in Geology, I had the challenging task of evaluating stability of slope cuts along major highways in my country. Soon, I realized the significance of understanding the impact of parent rock - soil mantle relationships on the stability of slope cuts. ITC Gent offered me the prestigious Rijk Universiteit Ghent scholarship to pursue a Masters degree in Soil Science. This was back in 1989.

2. Who has been your most influential teacher?

Over at ITC Gent, all the teachers were excellent and dedicated. However, I was particularly impressed by one Prof. Dr. Eric van Ranst. He had an excellent knowledge on clay mineralogy and made the subject matter extremely simple to comprehend by the group of international students. What attracted my attention most was the fact that he was a person with positive attitude, was always energetic, inspirational and above all, well respected by the students and his peers. He is currently the Director of ITC Gent, Belgium.

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

Currently, I do a lot of work on tropical Histosols on a professional basis. I have worked on Oxisols and related soils for my PhD in Saskatoon, under the NSERC assistantship program and continue to work on such soils in several of my projects, even today. There is always something new to ponder about pertaining to the genesis, morphology or mineralo-chemistry of the soils of the tropics. A lot of questions remain unanswered on mineral interactions and pore-solution chemistry in this tropical environment. There is still a lack of knowledge on the resilience of such soils under various kinds of management practices. Despite having identified many good research topics to pursue on tropical Histosols and LAC soils, I find myself limited and curbed by lack of opportunities to carry out such studies.

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

I suppose being enthusiastic about the subject matter would be a good place to start. Generating curiosity among students and younger generation takes a lot of commitment. Creating appropriate websites and e-discussion groups is one way. My passion for soil science encouraged me to start the Tropical Soil Science e-network <http://groups.yahoo.com/group/TropSoilSci/> & <http://www.geocities.com/eswaranpadma/> in 2001, where I tried to achieve precisely this. The e-network has about 780 active members to date. I have noticed that on many occasions, students from various parts of the world have been recommended to join this site by their supervisors or peers.

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

In my opinion, soil science in this region has a good future. This is primarily due to increasing attention being given to concepts on willingness-to-pay for changes in soil quality, soil remediation, resilience, deforestation and soil erosion, land degradation, C-sequestration in agricultural soils and global warming, conservation of eco-systems and plantation agriculture by governments and private industries. The emphasis in this region appears to be shifting towards environmentally sustainable management practices. This move is opening more avenues for research and development while focusing on long-term R.O.I. With increasing environmental awareness, our role as soil scientists will definitely play a vital role in all land management projects. It is therefore, imperative that soil scientists maintain a positive outlook and attitude while dedicating themselves to conserving and managing the non-renewable soil resources of this world. After all, we have borrowed this land from our children.

Five Questions to Marcello Pagliai

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1. When did you decide to study soil science?

After my degree in Agronomy at the Agronomy Faculty of the University of Pisa I worked in a private firm producing products for agriculture in Northern Italy. I worked on soil conditioners at the beginning but then I was moved to the pesticide division. At the first this change was very disappointing for me, but when I became fond of my new position I received a telephone call from one of my friends in Pisa informing me that the National Research Council announced a competition for a post of researcher at the Institute for Soil Chemistry in Pisa. I succeeded in that competition and in November 1974 I started my career as soil scientist.

2. Who has been your most influential teacher?

Without any doubt my career choices were strongly influenced by Paolo Sequi, Professor of Soil Chemistry, and my first Director at the Institute for Soil Chemistry. He convinced me about the potentiality of the application of soil micromorphology, combined with the image analysis, to research on soil physics and agronomy. Another important teacher was Prof. Giovanni Ferrari of the University of Firenze, who taught me soil micromorphology. My contact, in the early years of my research activity, with Dr. A. Jongerius of the Soil Survey Institute of Wageningen were also very important for the application of image analysis.



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

I am convinced that scientific research is one of the best activities and, therefore, is very exciting if it is done with passion. Personally I feel privileged to do this work, so I find everything exciting about soil science. Any way I consider the processes that happen in the long-term the most exciting: this increases the curiosity and urges the development of basis able to predict the effects of a specific system of soil use. Unfortunately, many of the environmental disasters we see today depend on soil degradation due to a continuative uncorrected land use in past years. We should be able to predict the consequence of anthropogenic activity in order to avoid soil degradation problems. Since soil degradation is a major environmental problem worldwide, this is the challenge of soil scientists in the near future. This challenge, for me, is very exciting!

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

This is a very difficult task, especially when in primary and secondary schools the problems connected with knowledge and protection of soil are generally neglected. The Italian Soil Science Society dedicates considerable effort to address this problem. It has set up a working group on soil education formed by very active colleagues that have published a specific educational book on soil called "Il Suolo che Vive" (The Living Soil) and, after the 17th WCSS of Bangkok (2002), we celebrate the World Soil Day every year on 5th December by the organization of meetings involving primary and secondary schools just to promote the sensitiveness to soil problems. To young graduates we often repeat that soil scientists in Italy have a very important task – they have to protect the soil and environment of the most beautiful country in the world!!

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

Generally I am pessimistic but in this case I am rather optimistic for a good future of soil science. If we are able to propose solutions for the valorization of soil resource and remediation to the problems of soil and land degradation in a way that can be easily understood to the decision-makers, then our future is secure. For this it is necessary to use an interdisciplinary approach and further effort to disseminate our results in a suitable form (like indicators) in order to give a real support to plan sustainable development. More attention should be paid to the relationships between soil and crop quality.

It is strongly necessary that National Governments dedicate more attention and funds to scientific research, but the benefits of a strong support to scientific research are not immediate (especially in the field of soil science) and this, unfortunately, could be a reason for the low attention to scientific research by the Governments.

Five questions to Ruben Kretzschmar

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1 When did you decide to study soil science?

I first discovered my fascination for soils during my undergraduate studies at the University Göttingen, Germany, where I studied agricultural sciences from 1983 to 1985. We had a truly excellent lecture in introductory soil science including several exciting field trips led by Prof. Brunk Meyer and his group. I was most fascinated about the variability of soil properties in the landscape and about how much information one can read from a soil

profile, if one understands the processes leading to its formation. During my graduate studies at the University Hohenheim (1986-1989), I developed a special interest in soil chemistry and soil-plant interactions. I was also impressed and fascinated by the lectures of Prof. Ernst Schlichting on tropical soils and by many excellent field trips offered at Hohenheim, including a 2-week trip through southern Spain with Prof. Karl Stahr. After graduating in 1989, I decided to join the Ph.D. program of the Department of Soil Science at North Carolina State University, USA.

2 Who has been your most influential teacher?

There is no short answer to this question, because many different teachers and scientists have influenced my academic development in different stages of my career. My most influential teacher during my graduate studies was Prof. Horst Marschner, who was my Diploma thesis advisor at the University Hohenheim. During the time in his research group I experienced for the first time what it means to be a scientist. I studied the influence of Al-toxicity on growth of pearl millet and other crops in acidic sandy soils of Niger, West Africa. I conducted growth experiments in soil and solution culture, collected and analyzed soil solutions, measured root lengths, analyzed the nutrient status of the plants, etc., and ended up with a large data set to be interpreted. Horst Marschner was a great advisor during this time, because he always listened to my thoughts and gave inputs where needed. During the time at his institute, I learned a lot about rhizosphere processes, plant nutrition, soil-plant interactions, and about conducting research in general. As a PhD student at North Carolina State University, my most influential teachers were Profs. Wayne Robarge and Sterling Weed. Wayne Robarge taught me many important concepts in soil physical chemistry, while Sterling Weed was a great teacher in soil mineralogy. As a postdoc at ETH Zurich, I further developed my understanding of colloid and surface chemistry working with Profs. Hans Sticher and Michal Borkovec.

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

One of the most fascinating aspects about soil science is that it is a truly interdisciplinary science. One can study soils from the viewpoints of chemistry, mineralogy, physics, biology, social sciences, or other disciplines. It's a universe of its own. Also, many soils contain highly valuable information for archeologists, climatologists, and geoscientists. Another exciting aspect about soil science is its importance for nature and human life. Soils are one of the most important and vulnerable natural resources on earth. Practically the entire production of food and fiber depends on fertile soils. Protecting soils from degradation by human activities and global climate change will be one of the greatest challenges in the near future. Soil science can make a big contribution in this respect.

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

Students interested in the functioning, management or use of ecosystems will be exposed to soil sciences at some point of their curriculum. At ETH Zurich, my course in *Pedosphere* is mandatory for BSc students in agronomy, forestry, environmental sciences, environmental engineering, earth sciences and biology. In this lecture course, I try to stimulate interest in soils by explaining the role and functioning of soils in supporting terrestrial life on earth. In the following year, we offer a series of soil science field excursions and practical exercises. Field courses are very important, because without them most students perceive soil science as something very abstract. It is important to experience soils in the field early on, because then also the theory behind soil functioning becomes more fascinating. That's at least how it worked for me.

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

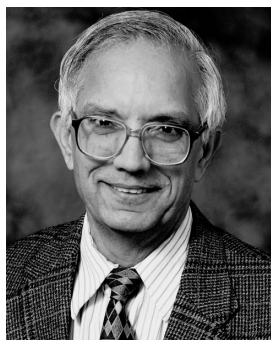
At the global scale, food production for a growing population while preserving soil fertility and water resources remains one of the most pressing problems of this century. Soil scientists can make important contributions in this field, both at the fundamental and applied level. Soil science also has an important role in other environmental issues, e.g., protecting biodiversity, predicting global element cycles and the emission or absorption of trace gases relevant for global climate change, improving hydrologic and climatic models, or understanding and controlling the fate of organic and inorganic pollutants in the



environment. In all these and other areas, fundamental and applied research on various aspects of soils is essential. There are many exiting opportunities, especially at the interfaces between soil science and other scientific disciplines. Therefore, I think that soil science does have a positive future. However, we need to convince policy makers that soil science should be given a high priority and that excellence in teaching and research in soil science needs to be maintained.

Awards, Medals, Prizes and Honors

von Liebig Award 2006 - Rattan Lal



Rattan Lal, Ph.D., professor of soil physics in the School of Environment and Natural Resources, and Director of the Carbon Management and Sequestration Center, FAES/OARDC at The Ohio State University (OSU), Lal served as a soil physicist from 1970 to 1987 at the IITA, Ibadan, Nigeria, conducting long-term experiments on land use, watershed management, methods of deforestation, erosion control, no-till farming, and agroforestry. Since joining OSU in 1987, he has worked on soils and climate change, soil degradation and global food security. He is a fellow of the American Society of Agronomy (ASA) Soil Science Society of America (SSSA), Third World Academy of Sciences, American Association for the Advancement of Sciences, Soil and Water Conservation Society (SWCS), and Indian Academy of Agricultural Sciences. He received the International Soil Science Award, the Soil Science Applied Research Award, and the Soil Science Research Award of the SSSA, the International Agronomy Award and Environment Quality Research Award and Carl Sprengel Agronomic Research Award of the ASA, the Hugh Hammond Bennett Award of the SWCS, and 2005 Borlaug Award. He was awarded an honorary degree of Doctor of Science from Punjab Agricultural University, India and of the Norwegian University of life Sciences, Aas, Norway. He is past president of the World Association of the Soil and Water Conservation and the International Soil Tillage Research Organization, and President-elect of the SSSA. He was a member of the U.S. National Committee on Soil Science of the National Academy of Sciences (1998-2002) and Lead Author of IPCC (1998-2000). He has served on the Panel on Sustainable Agriculture and the Environment in the Humid Tropics of the National Academy of Sciences. He has authored and co-authored about 1100 research publications, in addition has written 9 and edited or co-edited 43 books.

Dokuchaev Award 2006 - Victor Targulian



Victor Targulian has spent his 50-year scientific career striving to develop a pedology model as a basic Earth and Biosphere science. During that time, he has described the place and role of the pedosphere among the surface exogenic systems of the Earth and other terrestrial planets while formulating the concept of soil memory as a specific type of record of the biosphere-geospheres interactions. Targulian has developed the general theory of soil system behavior in-time based on the concept of characteristic times of the specific pedogenic processes. He has also studied and revealed the main features of the weathering and pedogenic processes in arctic and boreal humid areas of the northern Eurasia, while developing the method of very detail-field mezo-morphological investigation in complex-organized soil bodies (Albeluvisols) and has studied their cutans assemblages as soil memory carriers and intrasoil barriers and membranes.

Kubiëna Medal 2006 - Herman Mùcher

Dr. Herman Mùcher, one of three nominees for the Kubiëna Medal, 2006, was unanimously awarded the medal for his outstanding and innovative research based on a combination of meticulous observations in the field, in the laboratory, and in thin sections. During his early career, he founded the micromorphological laboratory at the University of Amsterdam, greatly improving preparation techniques. Recently, he has directed his research towards palaeosols, a theme that Kubiëna also probed. A most important aspect of his work has been his experimental approach toward sediment and soil transport as a basis for micromorphological interpretation of natural soils. During his career at the University of Amsterdam, he trained many graduate and postgraduate students, and was involved in all the Erasmus intensive courses on micromorphology until his retirement.

Kubiëna Medal Posthumous Award - A. Jongerius

Dr. A. Jongerius passed away in mid-life, shortly after the establishment of the Kubiëna Medal award. The Committee noted that, had Dr. Jongerius been nominated, he would have proved an outstanding candidate. Apart from his innovative and extensive scientific work, he was the de facto founder of the of the International Working Meetings on Soil Micromorphology, the driving force behind the International Working Group on Soil Micromorphology and the person who saw to the recognition of micromorphology as Subcommission B of the ISSS. Had he survived to the present we are certain he would have actively supported the Commission 1.1 Soil Morphology under the new structure. The posthumous award of the Kubiëna Medal to the late A. Jongerius is seen as an expression of appreciation for his outstanding and pioneering contribution to soil micromorphology.

Webster Medal 2006 - Alex McBratney

As Chairman of the Richard Webster medal committee I have great pleasure in announcing that the first person to receive the award is Professor Alex McBratney. The committee members were unanimous in their decision. Below I give the committee's reasoning for their selection of this nominee according to the guidelines that were established for this award.



1. Application of mathematics or statistics in soil science through published works

Alex has introduced methodologies that apply to soil genesis as well as land management. He has contributed to theoretical concepts of soil formation and their distribution and introduced soil inference systems to soil science. He has applied fuzzy sets to mapping soil classes and has recognized the benefit of using spectral analysis in relation to agronomic practices. He has published a large body of influential work.

2. Innovative research in the field of pedometrics

This criterion assumes a familiarity and understanding of a broad spectrum of spatial and temporal statistical analyses used in conjunction with diverse concepts of processes and properties in soil science. Alex's innovative achievements have been diverse and have shown strong creativity and great insight.

He has been involved in a large number of research projects that have had considerable impact.



3. Leadership qualities in pedometrics research

Alex plays a major role in promoting digital soil mapping internationally. He leads a group on soil resource assessment that includes basic soil science research and pedometrics, and both are applied to soil management. He leads a well established group in precision agriculture.

4. Contributions to various aspects of education in pedometrics

Alex introduced Pedometrics as a university subject in Australia, developed one of the first, perhaps even the first, university course named pedometrics, has supervised about a dozen PhD students in pedometrics, and developed and teaches a training course for the agricultural industry. He has done a good job of upgrading the syllabus based on pedometrics at the University of Sydney for professionals in the agricultural industry. He has worked on pedometrics for much of his professional life. Alex has held the most prestigious academic post in soil science in Australia. He has taught and inspired many undergraduates. Alex sets a high standard and teaches with a flair and wit that is rare.

5. Service to pedometrics

Alex McBratney proposed the word pedometrics which helped to formalize this new discipline in soil science. He is chairman of the Working Group on Digital Soil Mapping (International Union of Soil Sciences, 2004-2006), was chairman of the Working Group on Pedometrics (International Society of Soil Science, 1994-1998), nominated and received Best Paper Awards, (Pedometrics, International Union of Soil Science). He is on the editorial board of Precision Agriculture (1997- present).

Margaret A. Oliver

IUSS Honorary member - Winfried Blum

Winfried E.H. Blum earned his PhD in Natural Sciences in 1968 and became an associate professor in 1972, teaching soil science and serving as lecturer for clay mineralogy at the University of Freiburg, Germany, then became a visiting Professor and Director of a University Partnership Project at the State University of Paraná in Curitiba/Brazil. Since 1979 he has been Professor of Soil Science and Director of the Institute of Soil Research at the University of Natural Resources and Applied Life Sciences (BOKU) in Vienna/Austria. Since 2004 he has served as President of the European Confederation of Soil Science Societies (ECSSS). Blum was Chairman of the Commission of Soil Protection at the Council of Europe, Strasbourg/France (1989-1994) and Secretary-General of the International Union of Soil Sciences (IUSS) (1990-2002). He is a member of the Scientific Committee of the European Environment Agency (EEA), Copenhagen/Denmark (1994-2002). He has served as a Member of the Executive Board, of the Committee on Scientific Planning and Review (CSPR) and Chairman of the Standing Committee "Sciences for Food Security" of the World Council for Science (ICSU), Paris/France (1996-2002). He has served as Co-editor or member of editorial boards of 14 scientific journals and written about 450 publications in 9 languages in the areas of soil chemistry and mineralogy, land use, soil and environmental protection. He is an honorary member of several academies and national soil science societies, and has received numerous distinctions and awards.

IUSS Honorary member - Hans-Peter Blume

Hans-Peter Blume as a student of agriculture and chemistry earned his Doctoral of agricultural Science degree at Kiel University. His career included serving as assistant professor for Soil Science, at Stuttgart-Hohenheim, and professor of Soil Science at the Department of Ecology, Technical University of Berlin (West). At the University of Keil Dr. Blume has served as professor and director at the Institute of Plant Nutrition and Soil Science, and director at the Ecological Centre. His research has included "Stagnosols", desert soils in the Central Sahara, soil ecology, and Cryosols in Antarctica. He has served as President of the German Society of Soil Science, as a member of the ISSS committee

on Standardization, as a member of ISSS-WRB and an honorary member of the Polish, Romanian, and German Societies of Soil Science. Dr. Blume is Emeritus Professor, Institute of Plant Nutrition and Soil Science, University of Kiel.

IUSS Honorary member - Johan Bouma

Johan Bouma received his MSC and PhD degree at Wageningen University, the Netherlands, and served as a postdoc at the Soils Dept. University of Wisconsin in Madison, USA, studying soil disposal of septic tank effluent. In 1973 he became a UW Associate Professor with tenure. In 1975 he returned with his family to the Netherlands where he started the Department of Soil Physics at the Netherlands Soil Survey Institute (STIBOKA), becoming Deputy Director in charge of research in 1983. In 1986, he joined Wageningen University as Professor of Soil Inventarisation and Land Evaluation, a position from which he retired in 2004. His research covered water and solute movement in structured soils, relating soil morphology to flow patterns; development of pedotransferfunctions; effects of soil management defined in terms of phenofoms, to be derived from a given taxonomic soil-genofom; land use policy; and interactive research with stakeholders and policy makers . From 1998 to 2003 he was a member of the Scientific Council for Government Policy, a think-tank in the prime minister's office. He is a fellow of the SSSA (1983), an elected member of the Royal Dutch Academy of Sciences (1989) and a Korrespondierender Mitglied Deutsche Bdenkundliche Gesellschaft (1989).

IUSS Honorary member - Seong-Jin Cho

Seong-Jin Cho earned his PhD degree from Chungnam National University in 1967, specializing in soil fertility. He worked for 30 years as a professor of soil science and served for 4 years as the President of the Chungbuk National University, Korea, where he recently retired as an emeritus professor. During 1987 to 1988, Cho served as President of The Korean Society of Soil Science and Fertilizer. He organized a number of international symposia in soil sciences and related fields.

IUSS Honorary member - Jan Glinski

Em. Prof. Jan Glinski is a full member of the Polish Academy of Sciences. As the Director of the Institute of Agrophysics in Lublin during 1982 to 2003, he was the initiator and active promoter of scientific cooperation with many universities and institutes in Poland and abroad and organizer of international conferences on agrophysics. A member of the ISSS (since 1961) and vice-chairman of the Commission I (Soil Physics) of the ISSS (1986-1990) Glinski served as author or co-author of over 300 papers, 2 books (1985 and 1990), 26 monographs, 18 patents and 7 multilingual dictionaries of agrophysics. He specializes in searching for soil erosion processes, soil chemistry, soil aeration and its role in agriculture and environmental protection, as well as soil-root interactions. He has been an active participant of 8 World ISSS Congresses (1960, 1964, 1974, 1978, 1986, 1990, 1994, and 1998) and served as Editor-in-Chief of the journal International Agrophysics (since 1992).

IUSS Honorary member - Marcel Jamagne

Marcel G.H. Jamagne, now Emeritus Research Director of the National Institute for Agronomic Research (INRA), was President of the French Soil Science Society from 1995 to 1999 and Vice-President of ISSS/IUSS from 1994 until 1998. He was co-organizer of the 16th World Congress of Soil Science in Montpellier in 1998. Born in Brussels, he served as Engineer of Agronomy and Forestry in 1955, and earned his Doctor in Sciences (PhD) in 1973. He worked in Soil Survey in Central Africa for four years, returning to France to INRA, Soil Science Department. In 1961, he initiated a specific method of detailed survey



that has been used later on by many countries in Europe and Northern Africa. In 1968, he created the Soil Survey Staff of France and served as Director and kept this responsibility until 1997, when he was appointed Emeritus Director. Since the 1970's he has been national delegate and international expert for FAO, UNESCO, UNEP and the Council of Europe and the European Commission dealing with soil survey, use and conservation. He was nominated Chairman and general coordinator for the elaboration of the European Soil Geographic Database. He has professional experience in different regions of Europe, Africa, South America and Asia. Jamagne is still an active referee and reviewer for numerous editorial boards of scientific publications, and Chief Editor of the journal of the French Soil Science Society. He has been lecturer at different universities in Europe and South America. He is a Member of the Agricultural Academy of France and has received many awards during his career.

IUSS Honorary member – Don Nielsen

Donald R. Nielsen, Professor of Soil and Water Science at the University of California, Davis, taught soil physics courses, integrating chemical and biological processes. His research and that of his students included miscible displacement, microbiological transformations, scaling soil properties and analyzing field soil variability. While at Davis, he collaborated with 90 soil scientists from 40 countries. Nielsen retired in 1994, but he continues to visit and encourage young colleagues worldwide. He has served as president of Soil Science Society of America, American Society of Agronomy, Hydrology Section of the American Geophysical Union and Soil Physics Commission of ISSS. He is chair of the US National Committee of Soil Science.

IUSS Honorary member - Hans van Baren

J.H.V. van Baren, 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. Dr. van Baren joined FAO-Unesco, working on the FAO-Unesco Soil Map of the World. Its completion in the mid 1970s is by many regarded as an important milestone in soil science. Later, van Baren conducted soil surveys in Bangladesh for FAO for two years before being posted to Kenya to assist with the development of the national soil survey institute. With his Dutch colleagues, (a.o. Dr. W. Sombroek) the first soil reconnaissance of the whole country was made followed by detailed mapping of areas of high agricultural potential. van Baren collected and prepared soil monoliths during his tenure with the International Soil Museum (ISM, now ISRIC following the classification of the FAO-Unesco Soil Map of the World). These monoliths were the foundation of the unique ISRIC collection of today, with over 900 soil profiles. The transfer of the International Soil Museum from Utrecht to Wageningen took place in 1978. In addition to the work on monoliths, van Baren was concerned with developing the display of soil monoliths in the exhibition hall. This display was based upon the categories of the Legend of the FAO-Unesco Soil Map of the World, extending the fascinating work he began with Dr Dudal in Rome. van Baren started the book review section of the ISSS Bulletin in the early 1970s. Each year the number of reviews grew and in the 1990s, he 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. Elected Deputy Secretary General of the ISSS in 1990, he became heavily involved in the day-to-day management of the society including its transformation to a union (IUSS). He has been supportive in national soil science societies, particularly in developing countries and has maintained a wide global network of soil scientists. In 2002, he officially retired from his Deputy Secretary General post of the IUSS, but he continues to review books for the IUSS Bulletin.

IUSS Honorary member – Larry Wilding

Larry P. Wilding is Professor Emeritus, Soil and Crop Sciences Department, Texas A&M University, College Station, TX. He earned his PhD from the University of Illinois in 1962 and has served as a pedologist on the faculty of The Ohio State University from 1962 to 1976, as Visiting Professor at the University of Guelph, Ontario, Canada, from 1971 to 1972, and as Professor of Pedology at Texas A&M University from 1976 until his retirement in 2003. He has over 40 years of teaching and research experience in near surface geoscience processes, soil diversity, soil micromorphology, hydric soils, soil classification, Vertisol genesis, soil carbonate enrichment, soil carbon sequestration, surface mine reclamation, and international agriculture land use and development. He served as president of the Soil Science Society of America, charter member of the US National Committee on Soil Science, member of several NRC/NAS Committees, member of the Executive Committee of the American Geological Institute, Chairman of Subcommission B (Soil Micromorphology) of the International Soil Science Society, Member of Statutes and Structure Standing Committee of the International Union of Soil Sciences, and currently serves as the co-chairperson of the 18th World Congress of Soil Science Organizing Committee. He is a registered Professional Soil Scientist and Professional Agronomist with ARCPACS, Soil Science Society of America, and Professional Licensed Geoscientist (Soil Scientist) in the State of Texas.

John Ryan wins International Crop Nutrition Prize

It has been announced by the Paris-based International Fertilizer Association that an Irish soil scientist, Professor John Ryan, is to be Laureat of the 2006 International Crop Nutrition Prize. The Association, a global consortium of over 500 fertilizer/chemical companies around the world, sponsors the annual Award which is given to an eminent scientist based on his international contributions in the field of crop nutrition. Candidates for the Award are judged by an international panel of experts. The competition this year was open to all industrialized countries as well as from international agricultural centers.

As Laureate for 2006, Dr. Ryan will be presented with the Prize, along with a cheque for 10,000 Euros, at the Association's Annual Meeting (June 4-7) in Cape Town, South Africa. Dr. Ryan and his wife, Barbara will travel to Cape Town and be hosted by the Association. The Prize also includes an additional all-expenses trip to a professional meeting anywhere in the world.

Professor Ryan, a native of Ardfinnan, County Tipperary, is currently based in Aleppo, Syria, with one of the international agricultural research centers, The International Center for Agricultural research in the Dry Areas. Following graduation at University College Dublin, with a basic degree in Agricultural Science (1967) and a Doctor of Philosophy in Soil Science (1971), Dr. Ryan spent 4 years as a Fulbright Scholar at the University of Arizona, where he conducted research in relation to environmental wastes in addition to obtaining a Master's Degree in Agricultural Education (1973). He subsequently spent 11 years (1975-1986) at the American University of Beirut, Lebanon where he was Professor of Soil Science. He then served for a 5-year period as Professor of Agronomy and Soil Scientist with the University of Nebraska based in Settat, Morocco. In 1992, Dr. Ryan moved as Soil Fertility Specialist to the International Center for Agricultural Research in the Dry Areas in Aleppo, Syria. Dr Ryan has traveled extensively in the Middle East, North Africa, and Asia, and spent a scientific leave in Australia in 2002.

Professor Ryan has received considerable international recognition for his research, development and education efforts. He is Fellow of the American Society of Agronomy, Fellow of the Soil Science Society of America, recipient of the International Soil Science Award, recipient of the International Service in Agronomy Award, and "Distinguished Citizen" of the University of Arizona. He has been recognized by his alma mater, University College Dublin, with a Doctor of Science Degree based on his published work.

Professor Ryan has served as Chairman of the International Agronomy Division of the American Society of Agronomy, and is current Chairman of the Commission of Soil Fertility and Plant Nutrition in the International Union of Soil Scientists. He is also an Organizing



Committee member for the International Soil and Plant Analysis Council and the Mediterranean Soil Network. He is a member of the Scientific Advisory Committee of the World Phosphate Institute. Dr. Ryan serves as Associate Editor/Editorial Board member of several national and international journals, including the *European Journal of Agronomy*, *Nutrient Cycling in Agro-ecosystems*, and *Renewable Agriculture and Food Systems*. Professor Ryan is a frequent visitor to Ireland where he has several brothers and sisters in South Tipperary. He maintains an active interest in the affairs of the county and Ireland in general. His wife Barbara is from New Jersey, USA, and is a secondary school teacher. His daughter Sheila graduates in June from University College Dublin.

P.K.R. Nair wins Humboldt Research Award

P.K. Ramachandran Nair has been selected to receive the Humboldt Research Award, known as the Humboldt Prize, which is Germany's highest recognition for international senior scientists. Nair, a Distinguished Professor at the University of Florida, USA, is internationally known for his pioneering work and leadership role in agroforestry. He is one of the founders of the World Agroforestry Centre (ICRAF), Nairobi, Kenya, where he worked during the center's first 10 years. He was the Editor-in-Chief of *Agroforestry Systems* from 1994 to 2005, and chair of the 1st World Congress of Agroforestry, 2004. A life member of IUSS, and Fellow of the Amer. Assoc. Adv. Sci., Am. Soc. Agron., and Soil Sci. Soc. Am., Professor Nair has received numerous recognitions including honorary doctorate degrees from the universities of Kyoto, Japan; Kumasi, Ghana; and Guelph, Ontario, Canada.

Reports on the 18th World Congress of Soil Science

It was my very first time to go for a scientific congress of this size on soil science although I have been working in the field for more than 20 years. As I had been told before, that people would not get much with such kind of meetings, as they are too broad and general, and you would not meet many scientists working in the same specific area as you do there. However, the experience with the congress make me feel that this trip was worthwhile and fruitful. The congress was really beneficial for me.

Firstly, I have understood more deeply with the concept of the frontiers of soil science today, both global priorities in soil science both in general and in some specific areas, such as rhizosphere research, soil organic matter stabilization and carbon sequestration, soil microbial ecology and the studies in interfaces becomes more promising. Even more impressing, some new research area such as hydropedology, emerges and new technologies have been developed and applied to the soil science research, especially in the rhizosphere research and soil-related environmental issues. It seems to me, soil science is still alive and very active. We have to find out our way not just for survival rather for new perspectives.

Multi-disciplinary research is becoming the trend in soil science research. For solve the environmental problems, it becomes unavoidable to bring scientists in the different fields to work together. Even for the research in production aspects, soil scientists have to work and integrate ourselves with agronomists, plant breeders, food scientists, economists, as well as the soil scientists in different research areas in order to have a sustainable agricultural development. The congress provided a good opportunity for people to learn what the soil scientists in the areas other than ours have been doing so that it become easier for us to find out the partners in other area. It also clearly demonstrates that we could get to have much broader knowledge with the congress of this kind than with other conferences, seminars or workshops on some specific topics or area.

Facing the trend of economical globalization as well as that the environmental problems have become global issues, international cooperation in both soil science research and education are highly desirable. Cooperation could only take place between the people who

know each other well. Nowadays, people with common interests may easily get to know and communicate with others through the electronic media. However, face-to-face communication is still not replaceable. It is often that writing may bring some misunderstandings, and will not know much about the personalities of the people.

Soil science education has brought the great international concerns to soil scientists. Decline in both undergraduates and post-graduates student enrolments, as indicated by Dr. Alfred Hartemink, have been very significant in Europe, USA and Australia, over the past 10 to 20 years. Besides, teaching methods have been changed as well as the number of academic staff has been reduced. Students in soil science are getting strong in computer skill and information technology, more international experiences and more indoor activities than the field excursions. I believe this is a global phenomena, although student enrolled in soil science has been increased dramatically over last 10 years in China. Increase in student numbers do not means that there will be more soil scientists later. Rather, more and more graduates get jobs in governmental, industrial and busyness sectors other than in agriculture. To have a major in soil science is not their first choice for majority of the students. They come to agricultural university because they could not find other better universities to go. This is something to do with the infrastructure of China's higher education system and the government new policy in dramatically expanding the college student enrollment, as well as the great uneven development between urban and rural areas. Soil science education is in a transitional period. With changes in department and major's names, Soil science major is being replaced by resources and environment, will not be left many. Soil science has been partly integrated with environment and resource management and partly with crop science. However, the numbers of students taking the courses of soil sciences may increase, since soil is an important component of the environment. Soil science, as one of the major branches in earth and life sciences, will have a brilliant future, if we keep pace with global economical and social development. From this point, international cooperation in soil science education and international experiences for students are necessary.

Besides, I am glad to see that soil science research were addressed with both environmental and productivity orientations. The latter is still a big issue for the soil scientists in the developing countries to work with for ensuring the food security In addition, a growing concern for food safety becomes obvious too.

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To participate in the 18th World Congress of Soil Science was an exciting experience in many ways. One, the city of Philadelphia could not be better qualified, due to its history of multiple people origins and quest for independence, at the same time preserving and protecting old markers. Just as in science we look for the new but keep a foundation in the past from previous research and literature review. That brings another high point of attending the meeting. The opportunity to meet and listen to "references" on my field of research, as I believe happened to other new scientists. For instance, to hear Dr. Arnold presentation in the session No. 62 was a magic moment. From my studies at Purdue University, under Prof. Don Franzmeier, learning the bases of Soil Taxonomy, the name of Dr. Arnold became a reference, with others. Thus, to really meet Dr. Arnold was very moving, added to the nice presentation that only his experience could provide for such a broad audience.

The other highlight was to see Ethnopedology and Indigenous Soil Classifications as themes on the session No. 108, oral and posters. This subject is one of my interests in Brazil and, so far, there has being a sense that it is just a curiosity or a technical subject not genuine science. Thus, the effort of the IUSS to bring all perspectives on science to a soil science meeting is a very noble one, and to participate and be exposed to different points of view, even if we disagree from some of them is very enlightening. On national



meetings, after a while, we start to see some of the presentations as the same, no scientific advances or they are just not shown on the meetings, also the same people giving presentations. This brings a sensation of stagnation and we start to go to the meetings to get-together with friends or to sight-seeing places. The international meeting breaks this pattern, with so many people, different cultures, nations, points of view, and in the case of researches from less developed countries opportunities to share information from similar conditions, such as between Brazil and African countries, which have similar highly weathered soils.

The last high point was the beginning of the 18th World Congress of Soil Science - the opening ceremony with the speech from Dr. Sachs. I think that soil scientists, as in other groups, tend to get so involved in our research that we forget one of the main reasons of our studies, to contribute for a better management of our environment, also that the human species is part of it, for good or for worse. Thus, the call about the importance and the responsibility of soil scientists, from a "strange" fellow in the field, especially someone well known as Dr. Sachs, was very stimulating for me and I believe for many people in the audience.

Thus, finishing this report on my first experience attending the World Congress of Soil Science, it was worth and I am waiting for the next, and my only regret is that the one after that will not be in Brazil.

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After weeks of (occasionally frantic) preparation, several colleagues and I from the National Geospatial Development Center of the US Department of Agriculture-Natural Resources Conservation Service arrived in Philadelphia, Pennsylvania on the opening day of the 18th World Congress of Soil Science. The 18th World Congress was the first World Congress for most of us, and we were excited to have the opportunity to attend.

Sunday evening's opening reception was preceded by a chance to preview the exhibits. As is the case at most conferences, the place to find an NRCS employee is at the NRCS display and the World Congress was no different. The display, which included soil monoliths, informational materials, and computer terminals to access the Web Soil Survey, was generally well attended by NRCS employees and other conference participants. One colleague mentioned that while working the display, a conference attendee asked to purchase one of the soil monoliths. While the monoliths were not for sale, we did provide a set of instructions for making monoliths, which has hopefully been put to good use. It's certainly much easier to mail a set of instructions than a soil monolith!

After the exhibits closed on Sunday evening, we were treated to famous foods of Philadelphia including soft pretzels, hoagie sandwiches, and Tastykakes and a chance to mingle informally with colleagues from around the world. This was an excellent opportunity to renew acquaintances, catch up with old friends, and meet new people from all segments of the soil science community, before the business of the week began.

As my interests lie in the areas of application of digital soil mapping and representation of the resulting data, I chose to attend oral and theater sessions on New Frontiers in Soil Resource Assessment, Soil Sampling in Space and Time, and Multiscale Mapping of Soil Properties, among other topics. For the most part, the talks I heard were interesting and well presented. I've been spending a lot of time recently thinking about sampling methods, so I greatly appreciated the introduction provided in the talk "Sampling in Space and Time for Natural Resources Monitoring" by D. Brus et al.

On a different topic, the discussion of human-induced changes in soil New York City presented by J. Galbraith in the talk "Human Effects on Soils in Urban Area" was quite interesting and served to remind one of the sheer amount of earth-moving and shaping that has occurred and continues to occur in support of modern society. A colleague, in response to the question "What was one of the most interesting or unexpected things you learned during the meeting?", cited links between adverse health impacts in the Caribbean due to increased amounts of transported dust and changes in dust composition presented by V. Garrison in the talk "From *Aspergillus* to Timbuktu: African Dust, Coral Reefs, and Human Health".

A number of interesting Mid-Congress field trips, ranging from primarily cultural to primarily scientific were also offered to conference attendees. I was a presenter for the New Frontiers in Soil Survey tour, which provided participants an overview of methods and technologies being used to update and maintain soil survey information in a southeastern Pennsylvania soil survey office. After a discussion of several office-based data capture and analysis tools and methods including GIS and landscape modeling, soil information systems, and custom soil interpretation, two field sites were visited and a variety of field data collection tools were demonstrated. I appreciated the chance to see demonstrations of field tools such as ground penetrating radar and to learn more about soil survey activities in other countries from other tour participants.

One innovation that I found particularly interesting was the concept of poster theaters. The poster theaters were oral/poster presentation hybrids where authors prepared both posters and brief oral presentations describing the poster content. In the poster theater sessions I attended, typically 10 to 12 presentations were made over the course of two hours with limited time for questions and discussions in between each talk. The chance to both hear and read about a project is, in my opinion, ideal, as questions that arise while viewing a poster may be answered during the talk and vice versa. Unfortunately, the physical environment in which the poster theaters were held was less than optimal; the combination of competition from concurrent poster theaters and echoing exhibition hall conspired to make hearing presenters a challenge. I would like to see this format adopted at future conferences, though perhaps in quieter surroundings and with a focus on discussion and interaction among presenters and between presenters and the audience.

Unfortunately, we had to leave Friday afternoon before the official conclusion of the Congress. While it felt good to arrive home after, what had been for me at least, several long weeks of travel, there was at the same time the slightly melancholy sense of leaving behind the unique and diverse community of soil scientists represented in Philadelphia.

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The 18th World Congress of Soil Science (WCSS) brought in Philadelphia professional and scholars devoted to the development of Soil Science from all over the world for a period of seven days. The response was very good; the congress was very well attended. Soil scientists convened to share scientific results, new knowledge, appreciate technological advancement in soil science and share views on pertinent issues pertaining to the future of the discipline.

The organizing committee and the residents of Philadelphia made the congress a success from the scientific, social and cultural points of view. The supportive opening remarks from the Governor of Delaware, Honourable Ruth Ann Minner, his great welcome and recognition of the fundamental role of the soil science profession at a national and global level adequately sent a comforting signal and assurance to all participants. This brought joy to many participants and confirmed the correctness of the choice of the 18th WCSS venue reached by IUSS council in Bangkok during the 17th WCSS.

The IUSS chairman, Prof. Don Sparks, the 18th WCSS organizing committee and the community in Philadelphia, offered their best to the congress participants. The arrangement for Hamilton residence to be used by a the majority of congress participants



and the availability of guide shuttle service between this residence and the convention centre are just among the many privileges enjoyed by most of the participants. The receptions, the tourist attractions, the city's harmonious environment and the high degree of quality in every aspect of the congress made days pass unnoticed.

A wide range of recent technological advances in soil/earth sciences was displayed during the 18th WCSS. A greater portion of the display covered modern equipment for measuring soil moisture (soil moisture probes), soil hydrological properties, ground water monitoring, gas (CO₂, CO, CH₄, NH₃ and N₂O) emission monitoring, data loggers, combined soil moisture, salinity and soil temperature monitoring equipment for field use, crop performance/development monitoring technology and sensor-based mapping equipment, just to mention a few. Congress participants had ample time to interact with the manufactures and exchange views on areas for improvement.

Equally, journal and book publishers as well as service providing organisations such as the Natural Resource Conservation Service of the United States Department of Agriculture displayed wide range of new publications in soil science and related disciplines. One of the most interesting publications is the IUSS (2006) release 'The future of Soil Science', a publication to which 55 soil scientists from all over the world contributed. The book shows a wide range of views with regard to the future of this noble profession. The future is bright, according to majority of the authors. Nevertheless, in future soil science should face challenges of sustaining production to feed the current over 6.1 billion people, at an annual increase of 1.3% and projected decrease in per capita arable land area from 0.23ha at present to 0.14ha in 2050, global warming, changes in weather pattern (Nieder, 2006), management of soil as the ultimate sink of all sorts of pollutants (Minhas, 2006), land degradation and many other problems of global interest such as scarcity of water resources (Noble, 2006) and environmental sustainability (Nortcliff, 2006). For soil scientists to effectively contribute to the global village in facing these challenges, multidisciplinary cooperation with other relevant professions is absolutely essential (Nieder, op.cit.). The global soil science community ought to take these challenges and develop joint strategic studies and possibly report success in the forthcoming soil science congresses. Such approach would probably influence even the arrangements of some of the sessions of the congress. Future congresses may find it appropriate to include in the programme special multidisciplinary oral or poster presentation sessions.

Both oral and poster sessions were loaded a wide range of scientific information. Poster and oral sessions could be easily identified in the congress booklet and the well-designed labelling congress program enabled interested persons to locate the whereabouts of a given poster very easily. Authors of posters did very well by indicating the time when they would be available for interaction. It was also a very good arrangement that many authors left behind their business cards, reprints of their posters and some even provided paper and pen for comments. A handful of the poster presentations were accompanied with a full paper. Such approaches enabled interested persons to get extra useful details without excessive exchange of e-mails and other communication. In indeed, preparation of a full paper over and above the poster or power point presentation requires an extra effort of the author(s). Handling of full papers, if it were to be adopted by IUSS as a requirement on top of the oral/poster presentation would demand more human and financial resources as well as more time for the congress preparation. This could be an issue of discussion for future congresses if deemed necessary. However, in view of the rapid developments in information technology, handling of such large information in electronic format may not be a big issue in the future. An editorial committee of each respective commission or working group could handle the editing of the papers and submission deadlines could be changed to accommodate such changes.

The style of having different thematic session for oral presentation scattered within the convention centre and a similar approach for the poster presentations split the participants into small groups for nearly most of the time during the congress. The opening ceremony was one of the few occasions during when one could see the true size of the 18th WCSS, appreciate the age spectrum of the participants and some aspects of gender equity or balance. Such an appreciation was much easily captured during the opening reception due

to the free interaction. Men largely dominated the congress community. Young soil scientist, irrespective of gender appeared far fewer than the experienced professionals. Young ladies were even fewer in number. I had the same impression for the Commission and working group meetings that I attended. Details of distribution are not the purpose of this short account but representation from developing countries notably those in Africa was certainly low. The latter is certainly related to the comparatively low capacity building, low investment in soil science that is associated with low pace of acquiring appropriate research and testing equipment for soil/land resources in the national soil bureaux of most developing countries of which Thiombiano (2006) elaborated the case of Africa. Africa, whose economic problems, according to the keynote speech of Professor Jeffrey Sachs, are related to under utilization of land resources mainly caused by knowledge barrier of the small-scale land user. Professor Sachs considers such problems too miniscule in view of the existing global treasure in soil science knowledge, expertise and experience. It is in recognition of such resourcefulness that IUSS at the 18th WCSS gave awards to certain key personalities in the soil science community: Prof. Victor Turgulian, Prof. Rattan Lal, Dr. Herman Mucher and the late Dr. A. Jongerius for their exemplary scientific contribution. Gachene (2006) considers lack of support for local and regional soil science societies being one of the causes for failure of young people studying in universities in developing countries like Kenya to loose enthusiasm in soil science. Professor Sachs requested the global community of soil science, under the direction of IUSS to recognize its global responsibilities and look for ways to strengthen soil science in the most needy countries, particularly in Africa.

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This world congress was a great opportunity for many activities including different which were held prior the world congress; first on the "Measuring water content, water potential and water flow in soils; a short course for soil scientists held in July 8th. And "the use of nuclear techniques in addressing soil-water nutrient issues for sustainable agricultural production" the later organized by the International Atomic Energy Agency, Austria. From the above, it could be highlighted the important to tackle the issue of soil water for the sustainable agricultural system. The later workshop held in 9 July and consists of 15 oral presentation and 15 posters and were concentrated on the use of the nuclear techniques to study the soil water as well as nutrients balance. Also, they stress on the important of splitting evapo-transpiration into soil evaporation and plant transpiration.



The congress started in 9 July and in the presence of over 2000 participants from over 100 countries. In the opening ceremony, the organizers had addressed the issues of hunger and the need to secure good food and sustainable agricultural and resources systems. Then, it was announced the start of the world congress.

The congress consists of 179 sessions of oral and poster presentations over the period of the congress. Several important issues cover all the range of soil science starting from basic to applied topics and could be highlighted as following:

- 1- Soil classification and related issues still hot issue and need further works especially in the developing countries. Also, the use of GIS is to be further used for better land use.
- 2- Soil organic matter and its importance as a buffer zone for physical and chemical stress and the need to sustain it in the soil by slow break down.
- 3- Soil erosion, both wind and water and the need to eliminate this phenomenon using appropriate agricultural practices. Also, the use of simulation models to monitor the soil erosion and find solution to it.
- 4- Dry land research and it's important in all over the world, and since, more of the land becomes dry every year, and this illustrates the importance in either escape or avoid the drought or live with it. The later solution is a new thought in which the people will accept the dry land and accommodate themselves in these areas. Having this strategy, they will gradually have better solutions to dry land. Another issue is the zero tillage technique to conserve the soil water and eliminate the wind erosion.
- 5- Long term research to explore the influence of different crop rotation and influence of different cropping system on soil physical components which could not be seen in a short term period.
- 6- Soil water research and use of advanced technique to maximize the efficient use of the soil water and as a result water use efficiency (units of water used per unit of water and units of area). Also, an attempt is on the simple technique to split evapo-transpiration into soil evaporation and plant transpiration and use of nuclear technique to assist in this advanced research.
- 7- Simulation models and its use to assist in better planning of research and better use of the farm resources using a different scenarios and run for long period of time to cover the full climatic cycle of the test location.
- 8- Pedotransfer function research, which is down stream research, relating texture (easy measurements) to water retention curve and hydraulic properties of the soil (difficult measurements). This field of research required intensive measurements and could yield significantly important output results.
- 9- Education in soil science, which indicates some alert. The numbers of new soil graduate decreased as function of time for number of countries. The reason behind this could be due to the fact that not enough positions in the market. So, solution should be found to solve this problem, by may be educating the policy makers to generate new position for soil scientist as well as providing public awareness of the importance of soil science by giving seminars and have public meetings and may be spending more effort in the preparation of graduate lectures towards close tie between students and lecturer and getting students involve in research to bridge between theory and practice.
- 10- Using resources (nutrients) in an efficient way; including rock phosphate, as raw and organic source which would be very useful in reaching sustainable agricultural system and eliminate the use of chemical fertilizer.
- 11- Use of conventional water to get a higher yield and use of this waste water after having it treated in a proper way.
- 12- Exhibition which go along the congress and enrich the congress with some demonstration of advanced instruments and publisher in the related fields.

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Like other participants from Teaching College Universities, I returned from WCSS in Philadelphia, USA with a renewed sense of enthusiasm and objectives for the academic activities that we all consider so crucial – *conducting research and integrating it to more innovative and effective teaching*. I benefited greatly from that and subsequent meetings- I felt a part of the soil research community, learned about the International latest research, findings, recommendations, techniques, renewed guidance from more experienced scientists, presented my own research for validation and criticism and commiserated with other scientists about struggles and challenges. I enjoyed a great deal of support on my journey to becoming a more skilled soil science teacher as well as researcher through my participation in WCSS.

However, there is one interest that I would like to share regarding to the value of International Soil Science Research Projects (SSRP), especially for undergraduate students (with thesis). Based on my previous experiences working with Soil Science undergraduate students at the University of Bengkulu, Sumatra, Indonesia for over than 10 years, the value of SSRP must be emphasized. Part of the challenge in the action plan is usually trying to overcome the perception that SSRP must be complex and difficult. Another perception that SSRP is only for those already interested in Soil Science. There were a significant number of students who often tried to avoid SSRP because they thought the research were too complicated. In this case, the role of SS Professor is important to help switching these paradigms. After discussing with International Soil Scientists at WCSS meeting, several ideas may help to reduce the burden of students in doing SSRP.

First, SSRP represent an alternative learning path in which students must use the skills they have developed previously or as an addition for hands-on experiences. Second, the students must learn the importance of seeking quality in the facts that they use and in the volume of data necessary to draw valid conclusions. Third, the learning process in doing SSRP is trying to utilize the local soil-related problems as a basic question and link them with global Soil Science Research as a big picture inside the professor's long-term research planning.

Finally, the Professor can help seeking a feasible economical path to expand the availability of SSRP to more students and should do more cooperate with local community partners, local extension service agents, local companies and or national/ international organizations. Hopefully, we can establish and prove the value of SSRP in terms of local, national and international perspectives. I look forward to seeing more participation on related issues above at our next meeting and watching our future undergraduate students have more opportunities to unfold the soil's mystery.

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I was one of the 65 Canadian registrants at the 18th World Congress of Soil Science held at the Pennsylvania Convention Center, Philadelphia, PA, USA, July 9-15, 2006. The Canadian Society of Soil Science (CSSS) was well represented, including President Craig Drury and President-Elect Gerry Neilsen.

There were several simultaneous sessions. The 188-page *Program* was helpful in planning my participation. The "Poster theatre sessions" were introduced at this Congress. They provided an opportunity for authors to present brief synopses of their posters. Another feature introduced here was the fact that all posters were available for viewing throughout the Congress. The poster authors were asked to display a two-hour period of time when they will be present at their posters. The one-on-one discussions with the presenters (e.g., Bipin B. Mishra) were very useful. Each delegate received a copy of the book "*Future of Soil Science*".



John Ryan (Syria), Umesh C. Gupta (Canada), and friends at the Gala Dinner.

The Congress gave us a great opportunity to meet old friends and make new ones. I renewed my friendship with Soil Science Society of America (SSSA) Past President John J. Mortvedt with whom I served on Committee S889 (Coordination of Official Methods of Soil Analysis) about 10 year ago. I met Rudy Dudal who has participated in 13 of the 18 congresses. The first time I met him was at the 11th International Congress of Soil Science in Edmonton in 1978. Richard W. Arnold and I reminisced about the 8th International Soil Conservation Organization Conference that we attended in India in 1994. The exhibits and publisher displays were excellent meeting places. I have been involved with the Canadian Society of Soil Science and the Soil and Plant Analysis Council for several years. Some of the books of these two societies have been published by CRC Press, Boca Raton, Florida. It was beneficial to discuss with John Sulzycki, of Taylor and Francis Group LLC-CRC Press at Booth 303, the books to be published in the near future. A representative at the National Research Council Canada exhibit and I discussed the Canadian Journal of Forest Research and other publications. At another display I learnt about the contributions being made by the Potash and Phosphate Institute in agronomic research and education and met Terry L. Roberts (President), Paul Fixen, Tom Bruulsema, Cliff Snyder, and the scientific staff from various regions around the world, e.g., K.N. Tiwari and T. Nagendra Rao of the India Program. At the banquet I saw several friends including D. Keith Cassel who served as SSSA President during the same year when I served as CSSS President (1996-97).

During the mid-congress Tour 24, it was certainly a pleasure to meet Benno Warkentin whom I met a few months earlier at the CSSS-Canadian Geophysical Union conference in Banff, Alberta. He is the editor of the book "*Footprints in the Soil - People and Ideas in Soil*". A full report on the tour is published below.



Members of the Executive Organizing Committee (Lee Sommers, Larry Wilding, Don Sparks, Gary Petersen, and Lois Peterson) are to be congratulated for an excellent meeting. The 18th WCSS was my seventh international congress of soil science. Earlier I participated in the following six congresses: Canada (1978), India (1982), Germany (1986), Japan (1990), France (1998), and Thailand (2002). I am looking forward to participating in the 19th WCSS in Brisbane, Australia, August 1-6, 2010. I have very pleasant memories of this beautiful city where I participated in the 6th International Symposium on Soil and Plant Analysis in 1999. At the conclusion of the meeting, Vinod K. Suri and I explored the historical and cultural attractions of Philadelphia.

Yash P. Kalra (left) and Rudy Dudal renew their friendship at the WCSS.

A mid-congress tour on July 12

The tour started at 7:15 a.m. from the Pennsylvania Convention Center, Philadelphia, PA. There were 45 people on the tour, including 20 scientists from USA and the others from Australia, Canada, China, Croatia, Czech Republic, France, Germany, Ghana, Indonesia, Japan, the Netherlands, Puerto Rico, South Africa, Switzerland, and U.K.

The tour took participants from Philadelphia, through the Pennsylvania Dutch Country, to Stevens, PA. We were welcomed to his preserved farm by Pennsylvania State Senator Noah Wenger. Dennis Wolff, Secretary, Pennsylvania Department of Agriculture and Matt Knepper, Director, Lancaster County Agricultural Preserve Board gave an overview of the Farmland Preservation Program. Ed White, U.S. Department of Agriculture-Natural Resources Conservation Service (USDA-NRCS) and Richard Cronic discussed the profiles of the Hagerstown limestone soils. Then we traveled through the Amish Country. Kathleen Eshbach explained the Amish culture. We had the unique opportunity to enjoy an excellent home cooked meal for lunch at Esh Farm, an Old Order Amish Farm, in Kinzer, PA.

In the afternoon, we visited Cedar Meadow Farm, Holtwood, PA. Here Steve Groff and his family farm 175 acres of vegetables and other crops on hilly land. Steve has pioneered the "Permanent Cover Cropping System" which includes no-tillage, cover crops, and effective rotation as a way to enhance soil and water quality. Research programs that are being conducted on the farm were presented by Lisa Stocking from the University of Maryland and Joel Gruver from the North Carolina State University. The following USDA-NRCS scientists discussed the soils on the farm and other research programs: Mark Goodson, John Hudak, Natalie Irizarry, Rob Knight, and Ed White. Research summaries were distributed, but not discussed due to shortage of time, from Ray Weil, University of Maryland, Ron Hoover, and David Dowds. Otto Spaargaren of the International Soil Reference and Information Centre (ISRIC), Wageningen, the Netherlands explained the World Reference Base (WRB) soil classification at all the sites. We observed the soil



profiles and the soil differences under long-term no-tillage, conventional cropping, and woodland within the Pennsylvania Piedmont in Lancaster County. The photograph given below shows a soil profile in a pumpkin field where sweet corn was the previous cash crop and was followed by a clover and rye cover crop in which the pumpkins were planted. A brochure entitled "Biodrilling with forage radishes" conveyed the following message: *Soil is meant to be covered.*

A soil profile (Chester Series) at the Cedar Meadow Farm (Latitude 39° 51' 35.00" N,



Longitude 76° 18' 1.00" W): Cutanic Lixisol (Hypereutric, Chromic)

We arrived back at the Pennsylvania Convention Center at 7:00 p.m. Ed White and the members of his team are to be complimented for this educational tour. The tour was sponsored by the USDA-NRCS and the Lancaster County.

Pennsylvania is the only state that has a geologic time period (Pennsylvanian, 290-330 million years ago) named after it. This state has over 252,296 acres under permanent preservation through 2,132 agricultural conservation easements. Lancaster County is the most productive non-irrigated county in USA. Of the 630,000 acres in this county, 55% of the land is considered to be prime farmland. More than 68,000 acres of farmland on 865 Lancaster County farms are permanently preserved for agriculture. There is an increased urban pressure on the farms.

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Three Cuban scientists, all members of the Cuban Society of Soil Science (CSSS), had approved papers at the 18 WCSS: Graciela Dueñas and Aurelio García from Soil Institute, Havana and the young scientist Sandra Lok from Institute of Animal Science also at Havana. The first two ones, with financial support of the International Atomic Energy

Agency (IAEA) and the third one, supported by her Institute. Nevertheless and despite the efforts of the Organizing Committee (Donald Sparks) and IUSS (Stephen Nortcliff), nobody participated because they do not received USA Visa on time. Graciela and Aurelio received them several days after the Congress finished.

In 2005, the actual President of the CSSS, Olegario Muñiz, neither received Visa for the 2005 Annual Meeting of the Soil Science Society of America (SSSA) where he was invited in order to have the final check of the Pre - 18 WCSS Tour to Cuba, for that reason, he did not apply to 18 WCSS and Cuba was not present at the IUSS Council Meeting. Finally, the previously mentioned Tour, that was completely organized since 2005, was cancelled because 16 of the 21 interested delegates were USA citizens and they needed an special authorization from USA Department of Treasury.

CSSS is member of the IUSS but no Cubans had the possibility to participate in 18 WCSS. Nevertheless, we will keep relations with scientists and National Societies all over the world as an IUSS member.

Olegario Muñiz
Cuba

Reports of Meetings

The Oslo Conference for a Green Revolution in Africa September, 2006 Oslo

In the coming decades, Africa will have to feed a population that is expected to increase from around 850 million today to more than 1.8 billion in 2050. But at the current pace, it is estimated that Africa will be able to feed less than half of its population by 2015. Africa south of the Sahara has the highest proportion of impoverished people in the world, with nearly half its population living below the international poverty line. At the same time, nearly a third of the regions population is severely undernourished and Africa is the only continent where child malnutrition is getting worse rather than better Africa, alone among all the major regions of the world, has yet to have its green revolution. A major increase in agricultural productivity is absolutely essential. Constraints to African agriculture range from internal factors such as political and economic instability and unfavourable climate change to external factors such as unfair trade conditions and low foreign investment and aid.

Many experts argue that an African Green Revolution is essential for achieving food security in a continent that cannot rely on converting new land to agriculture. The United Nations Secretary-General Kofi Annan has called on the UN, as well as the African Union, to put agricultural productivity at the forefront of the struggle to eliminate extreme hunger and poverty – in accordance with the UN Millennium Development Goals.

The Oslo Conference on the Green Revolution in Africa was held between 31st August 2006 and 2nd September 2006 with the aim of supporting Africa's development by promoting agricultural productivity and food security by creating awareness of, and catalyzing action to support, key strategies and interventions for breaking the cycle of poverty and hunger in Africa. The Conference was co-hosted by two Norwegian public development institutions, Norad and Norfund, and two private sector participants, Yara International and Rabobank. Other participants were multinational companies, government officials, donor and investment agencies, researchers, scientists and NGOs. Key speakers included the Director of the UN Millennium Project, Jeffrey D. Sachs and World Bank Executive Director, Paolo Gomes.



The 1970 Nobel peace prize laureate Dr Norman Borlaug (1914) speaking passionately about African soils and the need for inorganic fertilizers.

The Resolution

The Conference resolved to take concrete and concerted action toward the development of self-sustaining changes in African agricultural growth through the use of enhanced approaches to public-private partnerships.

In achievement of the above goal, the Conference recognized the following conditions:

- The critical role of agriculture in building the wealth needed for Africa to reduce poverty and hunger
- The rights to engagement in the agricultural entrepreneurial process of both women and men
- The essential role in development played by NGOs and civil society
- The need for both public and private investment and engagement in African agriculture to stimulate sustainable agricultural growth
- The need for private-sector participation in the long-term development process
- The need for public-sector appreciation of the importance of business to development
- The value and need for public-private partnership to African agricultural development
- The need to fully understand and enhance public-private partnership models to maximize development effectiveness

The following themes emerged as supportive to the achievement of the goals:

- Public-private partnerships as a key to self-sustaining development
- Targeted research and transfer of science and technology to farmers
- Access to finance to allow development of farming and the surrounding infrastructure
- Linkage of production and output markets to facilitate appropriate production choices
- Development of, and participation in, new markets (e.g. Biofuels)
- The inclusion of aspects of health and education in the development agenda
- The importance and extension of the role of women in agriculture
- The encouragement of entrepreneurship in seeking positive growth in the sector

- The value of crop diversification in optimizing farmer returns and the understanding of principles of risk management to protect those returns
- The value of sustainable partnerships based upon mutual benefits for all stakeholders

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Annual Meeting of the Canadian Society of Soil Science, Banff, Alberta, Canada

The Canadian Society of Soil Science (CSSS) held its Annual Meeting at the Banff Centre in Banff, Alberta, Canada, May 14-17, 2006. It was organized in conjunction with the Canadian Geophysical Union (CGU). The conference provided an excellent opportunity to network and learn about the latest research and technological developments from the leaders in their fields. It brought together a broad spectrum of interests. There were 343 delegates including 144 CSSS members. This report focuses primarily on CSSS.

Approximately 150 oral and poster papers (one third of them by graduate students) were presented in the following sessions: Soil Water, Problem Soils, Northern Issues, Climate Change, Nutrient Management, Forest Soils and Management, Land Reclamation and Remediation, and General Soil Science.

The Ice Breaker on May 14 gave an opportunity to meet old friends and establish new contacts. The Barbecue on May 16 was at the famous Brewster's Mountain View BBQ site. There were two field trips: (1) Field Trip to the Burgess Shales on May 14 and (2) Forest Disturbance Field Tour on May 18.



Ed Gregorich (right) receiving the 2006 CSSS Fellow Award (presented by Gerry Neilsen)



The Annual General Meeting was held on May 15. The 2005-2006 CSSS Council includes Craig Drury (President), Gerry Neilsen (President-Elect), Anne Naeth (Past President), Newton Lupwayi (Secretary), Don Flaten (Treasurer), Sina Adl (Eastern Councillor), Xiying Hao (Western Councillor), Dean Mackenzie (Graduate Student Representative), and Frank Larney (Editor, Canadian Journal of Soil Science). The Awards Reception was held on May 17. Congratulations to Ed Gregorich (who was named a Fellow of the CSSS) and the winners of the Student Travel Awards, Bentley Awards for Oral Presentations, and President's Awards for Poster Presentations. Anne Naeth and the Organizing Committee are to be complimented for planning and hosting an excellent conference.

We continue our goals of forging links with other like-minded organizations. The next CSSS Annual Meeting will be a joint meeting with L'Association québécoise des spécialistes en sciences du sol at Auberge Duchesnay, Quebec, June 3- 6, 2007. Further information will be available on our website (www.csss.ca). In 2008, the CSSS conference will be held at the University of Northern British Columbia, Prince George, BC, July 6-9. The next CGU conference will be held in cooperation with the American Meteorological Society and the Canadian Meteorological and Oceanographic Society in St. John's, Newfoundland and Labrador, May 28-June 1, 2007 (www.cmos2007.ca).

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17th Conference of the International Soil Tillage Research Organization

The Seventeenth Triennial Conference of the International Soil Tillage Research Organization (ISTRO) was held August 28 – September 2, 2006, on the campus of the Christian Albrechts University in Kiel, Germany, the capital city of Schleswig Holstein. Professor Dr. Rainer Horn, ISTRO President 2003-2006, was the Conference Chairman. The theme of the meeting was "Soil Management for Sustainability." Approximately 300 participants from all continents except Antarctica attended. There were 160 oral presentations and 157 posters divided among 13 symposia. Separately, a partners' program was held that took guests on tours around Kiel and surroundings areas.

According to the bylaws of ISTRO, its goals are (1) to promote contacts among scientists undertaking research in soil tillage and related subjects, (2) to initiate conferences at which topics of soil tillage and related subjects are discussed, (3) to organize relevant workshops and demonstrations, and (4) to establish contacts and cooperation with organizations in other fields of science with similar purposes. The first international soil tillage conference was held in 1955, at Uppsala, Sweden (Dick, 1996). Early meetings of ISTRO often were held in conjunction with the World Ploughing Contest (Prof. Dr. Inge Håkansson, Swedish University of Agricultural Sciences, personal communication, August 29, 2006). At the 1973 conference, to ensure continued interaction among tillage workers, ISTRO was founded, and conferences have been held every three years (Table 1).

The ISTRO meeting in Kiel was well organized. Each day began with keynote lectures followed by the symposia. The thirteen symposia were: (1) Soil Dynamics and Traction. (2) Traffic, Tillage, and Soil Deformation. (3) Conservation Farming and Forestry. (4) Land-use Systems and Environmental Quality. (5) Soil Amendments. (6) Precision Agriculture. (7) Soil Erosion and Its Control. (8) Economical Aspects. (9) Soil Management Induced Global Change Effects. (10) Sustainable Land-use Management. (11) Soil Reclamation. (12) Soil Structure. (13) Soil Protection. The abstracts have been published (Horn et al., 2006a), and each abstract gives the names, addresses, and contact numbers of the authors. So the book of abstracts also serves as the list of participants. Full papers are published on a CD-ROM (ISTRO, 2006), and 59 of them have

been published in a book (Horn et al., 2006b). The sponsors of the 17th Conference, who helped to defray the costs of the publications, were: Eijkelkamp (Agriseach Equipment); Provinzial; UMS ("Measure to Know"); UGT (Umwelt, Geräte, Technik GmbH); EcoTech Umwelt-Meßsysteme GmbH; UP Umweltanalytische Produkte GmbH; Deutsche Bodenkundliche Gesellschaft; and Christian-Albrechts-Universität zu Kiel.

Table 1. Conferences of the International Soil Tillage Research Organization ISTRO

Number	Year	Place
First	1955	Uppsala, Sweden
Second	1958	Stuttgart-Hohenheim, Germany
Third	1962	Doorwerth, The Netherlands
Fourth	1965	Ås, Norway
Fifth	1970	Silsoe, United Kingdom
Sixth	1973	Wageningen, The Netherlands
Seventh	1976	Uppsala, Sweden
Eighth	1979	Stuttgart-Hohenheim, Germany
Ninth	1982	Osijek, Yugoslavia (now Croatia)
Tenth	1985	Guelph, Canada
Eleventh	1988	Edinburgh, Scotland
Twelfth	1991	Ibadan, Nigeria
Thirteenth	1994	Aalborg, Denmark
Fourteenth	1997	Lublin, Poland
Fifteenth	2000	Fort Worth, Texas, U.S.A.
Sixteenth	2003	Brisbane, Australia
Seventeenth	2006	Kiel, Germany
Eighteenth	2009	Izmir, Turkey

On the Tuesday evening of the Conference (August 29, 2006), a roundtable discussion was held concerning soil tillage, soil sustainability, global change, and arable and forest soil management strategies. Dr. Miroslav Kutílek, a soil physicist in Prague, Czech Republic, led the discussion. Others taking part in it were: W. Blum, D. Godwin, R. Hüttl, F. Makeschin, L. Montanarella, S. Nortcliff, D. Sparks, F. Tijink, and H. Wiggering. In his introductory comments, Dr. Kutílek made four points: (1) We need interdisciplinary research. (2) Should all agriculture be focused on yields? We need to consider sustainability, not just yields. (3) We are on our knees to "biodiversity," but we also should consider "pedodiversity." We need to define the characteristics of naturally fertile soils. We need to answer the question: Where are the boundaries of different taxonomic names? (4) In our research to reduce global warming through use of soils, we may forget many factors are involved. We have forgotten our geological education. What about continental drift? How do we explain warm periods in the Holocene or The Little Ice Age that began in the 13th century? We need to be more critical in using our arguments.

On the Wednesday of the Conference, participants joined one of four excursions: (1) Soil forming processes and land management practices on light soils in the Northwest of Schleswig-Holstein. (2) Kiel -- ecological farming research station. (3) Animal research station of the University, Kakendamm, and fruit production research station, Jork. (4) Conventional agricultural research station, Hohenschulen on the Westcoast (Northsea).

The Conference banquet was held Thursday evening (August 31, 2006) at the Drathenhof Molfsee, a beautiful old farm house on the outskirts of Kiel. The guests were serenaded by a mandolin orchestra that played songs from around the world. Dr. Brennan Soane, organizer of the 1988 ISTRO Conference in Edinburgh, gave the toast. He asked if anyone in the audience had attended the first official conference of ISTRO in Uppsala in 1976. Dr.



Håkansson, a world expert on the effects of machinery traffic on soils and crops, raised his hand. He organized that conference. Of interest to tillage workers is the new book on compaction of soils by Dr. Håkansson (2005). Dr. Soane noted the revolution in the way we communicate since 1976. Our lives are now dominated by e-mail and cell phones. But the common interest in tillage among the participants remains constant. At the closing ceremony on Friday afternoon, September 1, 2006, Dr. Horn made a similar comment. He said science has been changed by expensive, new equipment, but the most important thing in research is still the human brain—and that can be used with no cost.

At the business meeting on August 31, 2006, the new officers for 2006-2009 of ISTRO were announced: Secretary General: Jan van den Akker (The Netherlands); President: Engin Caker (Turkey); Treasurer: H. Allen Torbert (USA); President-Elect: Oswaldo Ernst (Uruguay); Assistant Secretary-General: Douglas L. Karlen (USA); Past-President: Rainer Horn (Germany). The 18th ISTRO Conference will be held at Ege University in Izmir, Turkey, in 2009 (dates not yet set).

I have attended all ISTRO conferences since 1979 except the ones in Nigeria and Poland. Earlier conferences had exhibits, or were supported by, the equipment makers. For example, the 11th Conference in Edinburgh was financially supported by John Deere and Massey Ferguson. The 13th Conference in Aalborg, was sponsored by The Goodyear Tyre & Rubber Company. Commercial exhibitors at the 15th Conference in Fort Worth, Texas, included John Deere and Case-DMI, and a major sponsor was Rome Plow Company. The 16th Conference in Brisbane was supported by John Deere. The absence of the equipment makers at the 17th Conference documents the breach that has occurred in recent years between those who want to protect the soil and those who want to make the best economical use of equipment. With larger equipment, a farmer has less cost for labor. However, the soil is being physically degraded in Germany because of the heavy farm machinery that the farmers are using. Some scientists are urging the federal government to limit the weight of the equipment. The largest sugar-beet harvester in Germany weighs, when loaded, about 60 tons, just as much as the biggest U.S. battle tank. A truck of that weight is not allowed on the German interstate roads, but no weight limit exists on arable fields (Prof. Dr. Rienk van der Ploeg, University of Hannover, personal communication, February 16, 2004). The damage done to soils by heavy equipment (and subsequent poor crop growth) is outlined by Ehlers et al. (2005). They point out that subsoil compaction is of particular concern. It is long-lasting and sometimes irreversible. Equipment with high-axle loads has been only available since about 1992. So the problem of subsoil compaction is recent. Along with the absence of farm-machinery makers, some agricultural engineers did not attend the ISTRO meeting in Kiel. The 2009 Conference in Turkey should show the direction that is going to be taken—i.e., whether governments will start to limit weight of equipment on soils for sustainability or if farmers will be allowed to continue to use heavy equipment.

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- Division of Soil Management, P.O. Box 7014, SE-750 07 Uppsala, Sweden; e-mail: Britt-Luoise.Atterdagsdotter@mv.slu.se; cost: 30 Euros).
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X Congress of Croatian Society of Soil Science Soil Functions In The Environment Šibenik, June 14–17, 2006

After five years, following the tradition of the Croatian Society of Soil Science, the Jubilee X Congress was held in Šibenik from June 14 – 17, 2006. The Congress was organized in conjunction with the International Union of Soil Science and European Confederation of Soil Science Societies as a Croatian congress with international participation, which was evidenced by contributions of participants from 15 countries - Australia, Austria, Bosnia and Herzegovina, Bulgaria, the Czech Republic, France, Iran, Italy, Latvia, Hungary, Macedonia, Slovakia, Slovenia, Turkey and Croatia.

The Congress was prepared and organized by teams of organizers working in Congress committees of multidisciplinary structure, both with regard to professions and specialties and institutions and companies from which they were elected. The Congress was headed by Prof. Ivica Kisić, PhD, Congress president and president of the Croatian Society of Soil Science, Prof. Davor Romić, PhD, chairman of the Scientific Committee, and Assist. Prof. Stjepan Husnjak, PhD, chairman of the Organizing Committee. The Honorary Congress Committee was made up of the leading Croatian and international soil scientists.

After the three plenary lectures, given by the President of the European Confederation of Soil Science Societies Wilfried E.H. Blum (New Research Concepts for the Protection of Soil in Europe) of Austria, Zed Rengel of Australia (Plants Alter Chemical, Physical and Microbial Properties of Rhizosphere Soil) and Zeljko Vidacek (State and Perspectives of Soil Science Development in Croatia), congress work proceeded in the following sections:

- ◆ *Standardization and Soil Data Management;*
- ◆ *Soil Fertility as an Ecosystem Concept;*
- ◆ *Microbial Indicators of Soil Quality;*
- ◆ *Soil, Water and Climate Changes;*
- ◆ *Trace Metals in Soils: Origin, Speciation and Bioavailability;*
- ◆ *Soil Degradation Indicators: Assessment, Forecast and Prevention;*
- ◆ *Sustainable Soil-Water-Plant Management, and*
- ◆ *Soil Fertility and the Environment.*

The program included 55 oral and 26 poster presentations.

The gala dinner involved presentation of prizes for the best posters and awards of the Croatian Society of Soil Science: "Prof. Mihovil Gracanin" to the best research assistants, and deserving scientists for their contribution to the development of soil science in Croatia. The Congress reflected the good traditions of the Croatian Society of Soil Science and was, in a way, the "crown" of its efficient work in this mandate period, but also an incentive to continue its activities in an even better way. The number and enthusiasm of participating research assistants is a guarantee for such expectations.

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The amphitheatre at Burnum -soil profile in 2000 years old archeological site

IV Latin-American Congress on Environmental Physics & Chemistry Spain May 22 to 26, 2006

The IV Latin-American Congress on Environmental Physics & Chemistry (IV CiFyQA) was held at Cáceres (Extremadura, Spain) from 22nd to 26th of last May (2006) at the 'Complejo Cultural San Francisco' of Cáceres (Extremadura). About 250 Latin American and European scientists, belonging to more than 15 countries, attended and more than 180 communications were exposed, oral or posters. A lot of public and private organizations supported this Congress.

This Congress was structured in twelve sessions, each one with beginning with a keynote exposed by a recognized international speaker. The sessions were: I. Processes in atmospheric Physics & Chemistry; II. Water & Environment; III. Anthropogenic-edaphic processes & Environment; IV. Cycle and sequestration of C in Latin America; V. Biogeochemical processes & cycles; VI. Environmental processes & technologies; VII: Health & Environment; VIII. Processes in environmental protection & bioremediation; IX: Society & Environment; X. Environmental Education, didactic, extension & dissemination; XI. Green Chemistry & Environment; and XII. Humic substances & Environment); in addition, six roundtables (Environmental management, Latin-American environmental database, Environmental disasters, Sustainable environment, Energetic resources, & Environmental education) were held with the participation of experts belonging to public and private organizations. Four field excursions were realized (Nuclear power plant of Almaraz, Big dam of Alcántara, Natural Park of Mongragüe, Wines caves of Almendralejo) visiting different cultural parts of Extremadura. Twelve awards remembering excellent biogeochemical scientists (e. g., *Janis Skujins Award*) were given at the best communications of the Congress.

The Congress finished with the General Assembly of the SiFyQA; the Minute can be downloading from the *WEB* page www.sifyqa.org.es.

Deliveries of the IV CiFyQA were the Proceedings ("*Libro de Actas*", out of order, but it is possible to download it at the *WEB* page www.sifyqa.org.es); and the book "*The Environment in Latin-America in the Beginnings of the XXI Century*" (ISBN: 978-84-611-0352-2; three vol.; in Spanish, with English abstracts). The list of chapters and communications is possible to download from the *WEB* page www.sifyqa.org.es. This last book, in three volumes, exposes the main environmental problems, which are focusing the Latin-American scientists from a Physical and Chemical point of view.

The next "V Latin-American Congress on Environmental Physics & Chemistry" will be held at Argentina in 2008; news will be presented at the *WEB* page www.sifyqa.org.es.

A Latin-American network on Environmental Physics & Chemistry (RiFyQA), is forming, using as base the *WEB* page www.sifyqa.org.es of the SiFyQA.

Dr. Juan F. GALLARDO LANCHO
President of the Organizer Committee & President of the SiFyQA

Second Global Workshop on Digital Soil Mapping Rio de Janeiro, Brazil

Scientists from five continents converged 4-7 July 2006 in Rio de Janeiro, Brazil, to participate in the Second Global Workshop on Digital Soil Mapping, which focused on regions and countries with sparse soil data infrastructures. Following a stunning field trip that transected the range in soils, landscapes, and land-uses of the Rio De Janeiro state, the 3-day workshop consisted of five sessions on various aspects on DSM, each with a keynote address, several scientific presentations, and discussion.





The workshop began with Dr. Philippe Lagacherie, INRA-Montpellier, France, reviewing the state-of-the-art of digital soil mapping (DSM). Lagacherie proposed that a significant challenge for DSM is the effective integration of DSM into existing soil survey programs and data. The session addressing the DSM challenges of dealing with limited spatial data structures was launched by Dr. Andy Jarvis, CIAT, CGIAR, Colombia. Jarvis emphasized there is a great potential for global digital soil information, especially if DSM can provide soil property data at spatial resolutions useful for decision-making in less developed countries. The DSM protocol, quality, availability, and capacity building session included the keynote by Dr. Robert MacMillan, LandMapper Environmental Solutions, Inc., Canada, illustrating experiences with applied DSM, noting that accuracy assessment was becoming increasingly important. Dr. Budiman Minasny, The University of Sydney, Australia, presented the keynote lecture on new DSM methodologies, reviewing technological advances in hardware (e.g., remote sensing) and software (e.g., data models that infer mechanisms vs. black box approaches that mine data but do not infer mechanisms). Minasny suggested a hybrid approach to DSM, where soil knowledge drives both data mining and modeling approaches. The session on examples of DSM to predict soil properties began with the keynote by Dr. A-Xing Zhu, University of Wisconsin, USA, improving the efficiency of field mapping by using a similarity index to represent soil distribution in transitional areas. Dr. Thomas Mayr, Cranfield University, U.K., commenced the session on examples of DSM to predict soil classes with a keynote addressing the difficulties and potentials of using legacy soil survey data for modeling soil distribution in new areas. Mayr stressed the importance of data preparation, identifying missing data, and understanding the limitations of model feature space.

The diversity of thought-provoking presentations in each session sparked constructive debate. Final discussion elucidated specific priorities for the development and implementation of DSM, including 1) data (DSM should be data-driven); 2) training (train students as well as established soil surveyors); 3) standards and standardization (document DSM methods and measures of uncertainty); 4) international collaboration (IUSS working group can facilitate this, but should work towards funding international projects); and 5) marketing (work to develop interest and investment in DSM at home and abroad).

The organizing committee was co-chaired by Dr. Maria de Lourdes "Lou" Mendonça-Santos of EMBRAPA Solos, Brazil, and Dr. Alex McBratney of The University of Sydney, Australia. Lou and her colleagues at EMBRAPA and CPRM were gracious hosts of this stimulating meeting in the dramatic setting of Rio de Janeiro.

More details see www.digitalsoilmapping.org

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International Training On Soil Examination And Fertility Evaluation Leyte, Philippines

The International Training on Soil Examination and Fertility Evaluation was held at the Leyte State University (LSU), Baybay, Leyte, Philippines on 16-18 August 2006. Organized by Dr. Victor B. Asio, Professor and Head of the Department of Agronomy and Soil Science at LSU, the training attracted 21 participants composed of teachers and graduate students of soil science, ecology, crop science and forestry from various universities in the Philippines as well as graduate students of forestry and agro-ecology from the Universities of Goettingen and Hohenheim in Germany.

Prof. Dr. Reinhold Jahn, Director of the Institute of Soil Science and Plant Nutrition at Martin Luther University in Halle, Germany, and former Chairman of the IUSS Soil Geography Commission, served as the main resource person of the training. His travel to Leyte was supported by a Visiting Professor Grant from the German Academic Exchange

Service (DAAD) in Bonn, Germany. Other lecturers in the training included Dr. Asio, former 2nd Vice-Chair of the IUSS Soil Geography Commission, and Dr. Anabelle B. Tulin, Professor of Soil Chemistry at LSU.

The training consisted of two days of lecture and one day of field work. The topics discussed in the lecture/theoretical part of the training included "soils as part of landscapes", "physicals and chemical properties of soils", "soils of the Philippines and Soil Taxonomy", "soils of the tropics", "factors of soil fertility and methods of assessing soil fertility", "soil description (FAO method)", "WRB soil classification system" and "soil evaluation". The training gave emphasis on the newly published Guideline for Soil Description by FAO (2006), the WRB soil classification system and the soil evaluation procedure based on the method of Schlichting, Blume and Stahr. On the third and final day, the participants had the opportunity to do actual soil description and evaluation during the field work in the Natural Park at Lake Danao, a beautiful lake surrounded by forest in the central highlands of Leyte at an elevation of about 700 m asl. The participants enjoyed examining and evaluating Andisols developed from Quaternary volcanics which are widespread in the area.



Participants and resource persons of the International Training on Soil Examination and Fertility Evaluation during the field work at Lake Danao, Leyte, Philippines

The training was jointly sponsored by the Department of Agronomy and Soil Science and the Institute of Tropical Ecology of Leyte State University (www.lsu-visca.edu.ph), and the Institute of Soil Science and Plant Nutrition of Martin Luther University, Halle, Germany. It was officially recognized and endorsed by the Commission of Higher Education (CHED) of the Philippines. In response to the request from the participants, a follow-up second training is planned for 2008.

Victor B. Asio
Leyte State University

The VI National Congress of the Cuban Soil Science Society

The VI Congress of the Cuban Soil Science Society was held at the Capitolio Convention Center of the Cuban Academy of Sciences at Havana City between March 8 to 10 2006 with the participation of 175 members of the whole country. Around 150 conferences and papers of different subjects like: impact of Global Changes on agricultural soils, urban soils, use of alternative sources to chemical fertilizers, education of Soil Science, etc; were discussed. On the General Assembly, Dr. Olegario Muñiz from Soil Institute (sccsmuniz@agrinfor.cu) was elected President of the Society for the next 4 years.



Upcoming Meetings

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

2006

Preferential flow and transport processes in soil 4-9 Nov **Switzerland**
Soil: food security and poverty 6-11 Nov **Peru**
ASA-CSSA-SSSA International annual meeting 12-16 Nov **USA**
Balanced Fertilization for Sustaining Crop Productivity 22-25 Nov **India**
2nd Int. Conf. Sustainable sloping lands & watershed 12-15 Dec **Lao PDR**

2007

4th African Soil Science Society Conference 7-13 January **Ghana**
Intensive Training Course on Soil Micromorphology 8-19 Jan **Spain**
Contamination CleanUp 4-8 March **Australia**
44th Annual meeting of the clay minerals society 2-7 June **USA**
10th International Symposium on Soil and Plant Analysis 11-15 June **Hungary**
2nd Int symposium on trace elements & health 18-20 June **Finland**
5th Int Congress of the European Society for Soil Cons. 25-30 June **Italy**
Organic matter dynamics in agro ecosystem July **France**
Pedofract 3-6 July **Spain**
9th Intern. conf. biogeochemistry of trace elements 15-19 July **China**
Enzymes in the environment 15-19 July **Italy**
Pedometrics 2007 27-30 Aug **Germany**
Soils with mediterranean type of climate 22-25 Oct **France**
ASA-CSSA-SSSA International annual meeting 4-8 Nov **USA**

2008

High resolution digital soil sensing and mapping 5-8 Feb **Australia**
International congress of irrigation and drainage **Pakistan**
EUROSOIL Congress 23-31 Aug **Austria**
5th International conference on land degradation 18-22 Sept **Italy**
ASA-CSSA-SSSA International annual meeting 26-30 Oct **USA**

2010

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

New Publications¹

Carbon Sequestration in Soils of Latin America. R. Lal, C.C. Cerri, M. Bernoux, J. Etchevers, and E. Cerri, editors. Food Products Press, an imprint of The Haworth Press, New York, London, 2006, xxiii + 554 p. ISBN 1-56022-137-2, softcover. ISBN 1-56022-136-4, hardcover.

The problem of quickly mounting carbon dioxide emissions in the fast-developing Latin American region was addressed in a symposium held in Piracicaba, Brazil, in June 2004. This book is based on the presentations given. It presents the latest available knowledge in carbon sequestration and improved soil management which can also lead to other positive

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

effects, such as greater fertility and higher crop yields. This text comprehensively reviews ways to best transform various soils from being a source of carbon released into the atmosphere to become a sink for carbon absorption. The book has four sections. The first section gives background information about the region, its climate, the soils, along with basic concepts about the science. The second describes recommended management practices and rates of soil C sequestration. The third deals with methods of assessment of soil C. The last section provides a summary of recommendations for further research and development. The book has many references and contains a large amount of figures, tables, and a 12-pp. color photo section.

For a complete list on contents, visit the website mentioned below.

Price: USD 49.95, softcover; USD 69.95, hardcover. Postage and handling extra.

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Vital Signs 2006-2007. The Trends That Are Shaping Our Future. The Worldwatch Institute. W.W. Norton, New York and London, 2006, 160 p. ISBN 0-393-32872-4. Softcover.

This annual publication from the same organizations as The State of the World – an annual report on progress toward a sustainable society – contains a large number of key indicators covering a variety of subjects in the fields of commerce, consumption, and many ecological trends. For instance: it is shown that the average atmospheric carbon dioxide concentration increased 0.6 percent over the high of 2004, the largest annual increase ever recorded, and that the average global temperature reached 14.6 degrees Celsius, making 2005 the warmest year ever recorded. It is also mentioned that deforestation accounts for 25 percent of annual human-caused carbon emissions. An interesting publication! For the State of the World 2006, see Bulletin 108.

Price: USD 16.95, plus shipping and handling.

Orders to: through the Worldwatch website: www.worldwatch.org.

Sampling for Natural Resource Monitoring. J. de Grijter, D. Brus, M. Bierkens and M. Knotters. Springer, Berlin, Heidelberg, 2006, xiii + 332 p. ISBN 3-540-22468-6. Hardcover.

There are several books and chapters of books dealing with the subject of monitoring, i.e., sampling in space, time or space-time. These books focus on applications within a particular discipline, for instance hydrology or vegetation science, and of course treat only the methodology relevant to that discipline. In doing so, they normally use the scientific jargon common to that field. However, scientists working in other fields may need different monitoring methods and may also profit from a more generic presentation.

The authors identified a need for a handbook on the statistical methodology of monitoring that gives applied scientists sufficient guidance in how to design a monitoring scheme, rather than presenting a large collection of methods. Although the authors focus on practitioners in the field of natural resource monitoring rather than statisticians, basic knowledge is required for a proper understanding of the methodologies described. In this book, methodologies are presented that are considered to be generally useful for survey and monitoring of natural resources. Highly specialized methods of geologic, meteorologic and faunistic surveys and monitoring are not discussed, nor are treated the sampling of lots of natural products or sampling for detection of local critical conditions. The spatial scale varies from a single agricultural field, as in precision agriculture, to continental, as in monitoring the water quality of large rivers. The temporal extent varies from, say, a growing season, to many decades in long-term monitoring of variables such as water tables. The examples that are presented are mostly dealing with soil, groundwater, land use, landscape and, to a lesser extent, vegetation.

Price: EUR 129.95; USD 169.00; GBP 100.00.

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Australian Soil Fertility Manual. Third edition. G. Price, editor. Fertilizer Industry Federation of Australia and CSIRO, 2006, viii + 168 p. ISBN 0-643-09021-5. Softcover.

This manual is a trusted guide to the safe use and handling of fertilizers. It describes the types of agricultural soils, how they are classified and the interaction of soil, water and nutrients. It also provides an insight into how plants utilize nutrients and the role that individual nutrients play in the process of plant growth. This new edition reflects the increased emphasis on the environmental fate of nutrients and appropriate management strategies. It also has additional information on soil physical, chemical and biological properties and discussions on the use of lime, dolomite and gypsum. New content covers liming effectiveness, water use efficiency, regulations for handling and using fertilizers, storage and transport of security sensitive ammonium nitrate, budgeting for profitable nitrogen use and best management practice for nitrogen and phosphorous fertilizers. Many other chapters have been revised and rewritten. An essential text for fertilizers dealers, extension workers, consultants, teachers, farmers, and others concerned with the profitable and safe use of plant nutrients. Although written for Australian conditions, this publication has many chapters with valuable information for those outside this continent.

Price: AUD 69.95.

Orders to: CSIRO Publishing, P.O. Box 1139, Collingwood VIC 3066, Australia. Fax: +61-3-9662-7555. Email: Melinda.chandler@csiro.au. In North America: Antipodes and Beyond, email: antipode@antipodesbooks.com. In Europe, Middle East and North Africa: Eurospan, c/- Turpin Distribution, Pegasus Drive, Stratton Business Park, Biggleswade, Bedfordshire SG18 8TQ, UK. Fax: +44-1767-601640. Email: eurospan@turpin-distribution.co.uk. Internet: www.eurospan.co.uk.

Ecohydrology. Vegetation Function, Water and Resource Management. D. Eamus, T. Hatton, P. Cook and Chr. Colvin. CSIRO Publishing, 2006, xii + 348 p. ISBN 0-643-06834-1. Hardcover.

The purpose of this book is to reveal and discuss the links between vegetation function and water in landscapes – that is, to discuss ecohydrology. The focus is primarily on the interactions among the woody components of vegetation, rainfall and changes in groundwater availability. Woody vegetation is the focus because of the centrality of changes in woody vegetation cover to the ecohydrology of Australia in the past 100 to 200 years. The book, with many figures, tables and color plates, deals mostly with the linkages between the functioning of trees and the movement, availability and location of water in the landscape of Australia. Although the book uses Australian examples, the principles, philosophy and methodological approach are applicable worldwide. The first section encompasses chapters 1 to 5. These chapters provide an overview of the water, vegetation and climate of Australia (Ch. 1), the basis concepts, tools and language of plant-water relations. (Ch. 2), and basic hydrology (Ch. 3) and the techniques and concepts used in ecophysiology and hydrology (Ch. 4). Chapter 5 integrates Ch. 2 and 3 by presenting models of vegetation-hydrology interactions. The second section encompasses chapters 6 to 8. Ch. 6 is a chapter on groundwater dependent ecosystems, an increasingly important subject of study in ecohydrology. Ch. 7 deals with five case studies of practical applications of ecohydrology. Ch. 8 discusses salinity and the links between land use, forest cover and landscape-water balance. The third section encompasses the remaining two chapters. Ch. 9 provides a review of the policies and guidelines governing the allocation of water and management of groundwater dependent ecosystems in Australia. Ch. 10 offers a case study of the South African ecosystem and water management. The chapter provides a synthesis and overview of the management of water and vegetation in South Africa and draws upon the language, concepts and practicalities discussed in Ch. 2 to 9. It is designed to show how ecohydrology and the sustainable management of water and vegetation are important not only in Australia but in all arid and semi-arid countries of the world, including much of Africa and the Middle East.

Price: AUD 120.00.

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Soil Management for Sustainability. Advances in Geocology 38. R. Horn, H. Fleige, S. Peth and X. Peng, editors. Catena Verlag, Reiskirchen, 2006, 502 p. ISBN 3-923381-52-2. US-ISBN 1-59326-246-9. Hardcover.

This book is based on the papers presented at the 17th Triennial ISTRO Conference, held in Kiel, Germany, from 28 August to 2 September 2006. Soil management techniques can be labeled sustainable when their requirements for land use consider and respect the site-specific properties and functions that soil fulfill in ecosystems. Interactions among the natural processes occurring in soils with those primarily caused by anthropogenic soil and land degradation processes alter not only the overall long term yield expectations by the farmers, but also the economically acceptable and safe yield forecasts. Additionally, soil modifications by tillage-induced decomposition of organic material, surface alterations by erosion, water pollution by lateral flow of contaminated soil water, i.e. interflow above impermeable plough pan layers instead of deep vertical infiltration to the groundwater, increased production of global climate change gases can be characterized as unadjusted site-specific land use effects. Soil structure, soil physical, chemical, and biological functions of soils under intense analyses and their interactions among coupled mechanical, hydraulic, chemical, and biological processes are often discussed but until recently, seldom quantified. The sensitivity of soils and their limited resilience under various land use and climatic conditions partly resulted in soil protection laws as well as in initiatives for a global concept of sustainable land management. However, the open questions concerning alternative land use systems and regulations for machine input which also consider the limited internal strength for given soil hydraulic conditions remain controversial. Soil vulnerability, associated economical consequences, and global change demand continuous discussions among various disciplines of soil science, plant production, ecology, hydrology, agricultural engineering, and mathematical modeling. It was the aim of this ISTRO Conference was to document the state of knowledge and to discuss new ideas in order to also derive more specific recommendations that could prevent, modify, and ameliorate the inordinate and global soil degradation processes, including the quantification of economic inputs.

Price: EUR and USD 139.00.

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Better Land Husbandry. From Soil Conservation to Holistic Land Management. J. Hellin. Science Publishers, Enfield and Plymouth, 2006, xiv + 325 p. ISBN 1-57808-244-7. Softcover.

This is the fourth volume in the Land Construction and Management Series, which is edited by M.J. Haigh. The series aims to publicize innovative work devoted to the restoration of lands that have been damaged by human actions and to advance new approaches to sustainable land management. Land shortages are forging large numbers of smallholder farmers to cultivate tropical steepplands. Often, soil conservation technologies are promoted to reduce the resulting soil loss. This approach has drawbacks: firstly it addresses the symptoms of soil degradation rather than its causes; and secondly, it often fails to recognize that farmers' central purpose is to generate maximum benefit from the land through agricultural production. As a result, farmer adoption of soil conservation technologies has been disappointing. An alternative holistic approach is better land husbandry; this places the farmer first and aspires to improve soil quality via the use of conservation-effective and productivity-enhancing technologies. Better land husbandry aims to maintain optimum soil conditions for the acceptance, transmission and retention of water, and for root growth and crop production. It provides a framework within which social and natural scientists are able to engage in productive dialogue with land users, leading to practical and realistically sustainable land management options. Based on



worldwide fieldwork, the author presents examples of better land husbandry in practice and outlines changes in policy that are needed if the better land husbandry approach is to fulfill its potential. The book contains 8 illustrative color photographs.

Price: USD 59.50, plus handling and postage.

Orders to: Science Publishers, P.O. Box 699, Enfield, NH 03748, USA. Fax: +1-603-632-5611. Email: sales@scipub.net. Internet: www.scipub.net.

For announcements of the books:

Footprints in the Soil. People and Ideas in Soil History edited by Benno P. Warkentin and published by Elsevier in 2006, and

The Natural History of the Bible. An Environmental Exploration of the Hebrew Scriptures written by Daniel Hillel and published by Columbia University Press in 2006, reference is made to the Newsletter of the Commission on the History, Philosophy and Sociology of the IUSS. See the website of the IUSS at www.iuss.org.

Soil science on CD ROM. Interactive Soil Science, Aberdeen.

This company produces CD ROMS on soil science subjects, authored by Dr. E.A. FitzPatrick. Dr FitzPatrick is well known for his books on microscopy and micromorphology of soils. At present, three CDs are available.

Interactive Soils- This CD is intended for pupils in the final year at school and as an introduction to students in universities. It has the following sections: introduction; processes in the soil system; properties of soils; soil fertility; world soils; soil geography; glossary; index; and word search.

Horizon Identification - This is another attempt to produce a soil classification, based on a new system of horizon identification with the use of a computer. It is followed by a variable system of soil classification, to suit the need of the survey. The system claims to be a simple one.

Soil Microscopy and Micromorphology - This is a copy of the author's book with the same title, but enlarged with many colour photographs. It has the following sections: techniques used in soil micromorphology; some micromorphological concepts and problems; properties of features in thin sections; properties of minerals; rock types; weathering features and products; matrix; structure and pores; faunal features; particle size distribution classes; organic matter; roots; and coatings. All CDs are produced with Windows XP, the horizon identification CD uses also Excel 2003. The CDs contain many illustrative colour photographs from around the world, giving the student an excellent overview of the various soils, horizons, landscapes, and micromorphological features. The CDs are very instructive teaching materials as well.

For further details see: www.interactive-soils.com

Prices: Personal copy: GBP 25.00; EUR 40.00; USD 50.00, plus postage and packing. For teaching and multiple copies: see the website.

Orders to: Interactive Soil Science, 76 Burns Road, Aberdeen AB15 4NS, Scotland, UK. Email: e.a.fitzpatrick@btinternet.com.

Application of the Emerging Soil Researches to the Conservation of Agricultural Ecosystems. J.E. Yang, T.M. Sa and J.J. Kim, editors. The Korean Society of Soil Science and Fertilizer, The Korean Society of Agriculture and Environment and the Rural Development Administration, 2005, 267 p. ISBN 89-954086-1-8. Softcover.

This publication contains the papers presented at a symposium under the title of the book, which was held in Seoul in September 2005. It is composed of thirteen chapters, covering the perspectives on the future direction of soil research, physical-chemical-biological interfacial reactions, soil organic matter in its quality and amendments, anthroscapes, roles of minerals and microorganisms for soil environment and productivity, and multifunctionality of the rice paddy and mountainous soils. Six papers are from Korean authors, the rest from around the world.

Orders to: The Korean Society of Soil Science and Fertilizer, 249 Seodun-dong, Kwonsungu, Suwon-si, South Korea. Email: ksssf249@hanmail.net. Internet: www.ksssf.or.kr

IUSS Divisions and Commissions Officers 2006 - 2010

The scientific activities of IUSS are undertaken through 4 Divisions and each Division has 4 to 6 Commissions – below are the officers for 2006 - 2010. Change of address please inform alfred.hartemink@wur.nl

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IUSS Working Groups

The scientific activities of IUSS are undertaken through Divisions, Commissions and Working Groups. Here are the contact details of some of the Working Groups officers.

Acid Sulphate Soils

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Cryosols

Chair	Eva-Maria Pfeiffer Germany	empfeiffer@ifb.uni-hamburg.de
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Digital Soil Mapping

Chair	Neil McKenzie Australia	neil.mckenzie@csiro.au
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International Actions for the Sustainable Use of Soils (IASUS)

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Land Degradation

Chair	PLEASE SEND	
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Forest soils

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Vice Chair	Chris Johnson USA	cejohns@mailbox.syr.edu

Urban soils

Chair	PLEASE SEND	
Vice Chair	PLEASE SEND	

IUSS Soil Song

Music: "Boxturtle Bob" Chirnside

Lyrics: "Boxturtle Bob" Chirnside and Alfred Hartemink

First sung at the closing ceremony of the 18th World Congress of Soil Science on 15th July 2006

The MP3 of this song can be downloaded from www.iuss.org

We call it soil

Chorus

It is our life! We call it soil
It is the stuff, in which we toil
From soil we've sprung, to soil we'll go
Protect the soil of this earth so we can grow

Verse I

From the podsols beneath snow drifts
To aridisols where few crops live
Soil is as varied, as the rainbow
And is as precious as a rainbow's pot of gold

Chorus

Verse II

Some soils are dry, some soils are wet
Some soils are fertile and from them high yields you get
But if you don't, give to the soil
Then you will not reap a thing for all your toil

Chorus

Verse III

We study chelates, leachates and porosity
We learn our muck and peat and mineralogy
Some study urban, some study rural
And we can tell just by the smell who's in manural

Chorus

Verse IV

Soils are just like, humanity
With yellow, brown, red, black and white, you'll see
That some are dull, and some are gray
And can fall prey to greed of man that's our decay

Chorus

Verse V

A living world beneath our feet
It even lives, beneath our streets
With flora and fauna, so complete
That it can save us from the brownfields of defeat

Chorus (Out)



IUSS Honorary members

	Member		Year	Member	
1924	L. Cayeux †	France	1986	H. Jenny †	USA
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	E. Ramann †	Germany		R. Tavernier †	Belgium
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1964	J.A. Prescott †	Australia	2002	R.W. Arnold	USA
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