

**International Union of Soil Sciences**



**IUSS Bulletin**

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## International Union of Soil Sciences (IUSS)

Editors: Prof. Stephen Nortcliff  
Department of Soil Science  
The University of Reading  
PO Box 233 Whiteknights  
Reading RG6 6DW  
United Kingdom  
+44 (0) 118 378 6559 phone  
+44 (0) 118 378 6666 fax  
E-mail: [iuss@reading.ac.uk](mailto:iuss@reading.ac.uk)

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

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

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Orders to: Prof. Stephen Nortcliff  
Department of Soil Science, The University of Reading, PO Box 233 Whiteknights, Reading RG6 6DW, United Kingdom. Subscribers are requested to notify Prof. Nortcliff of changes of address

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## News from the Secretary General

Given that this is the first Bulletin in 2006 I take the opportunity to wish you a successful and prosperous 2006. Time flies and we are already in April! The major event in the IUSS Calendar this year is of course the World Congress of Soil Science, July 9-15 in Philadelphia, USA. I presume that you have all now registered, but for those who have yet to do so I remind you that May 1 is the final day for registration at the normal price. If you are not registered by May 1 and have an offered paper accepted it will be removed from the programme.

The programme for WCSS is diverse and exciting. Because of the vast number of papers submitted it was not possible to allocate slots in the Oral Symposia to other than a very small proportion of those submitted. As an innovation we are introducing 'Poster Theaters' which are linked to the Poster Symposia. These will offer the opportunity for 10-12 people to make very short (less than 10 minute duration) presentations about their posters. In all probability this will be just be time to present the key findings or broader questions which arise from the work. The Theatres are to be set up close to the Poster Hall and will be organised in broadly the same way as an normal oral symposium. It is hope that this innovation will enhance the Poster Symposia and ensure that there is good debate on a wide range of issues throughout the Congress. In planning the Poster Symposia, posters should be displayed throughout the Congress, it is hoped that the timing of the Poster Theaters will provide a focus for discussion within the particular themes.

In addition to the Division and Commission symposia we have planned a number of cross-cutting and policy based discussions relating to the future directions for research in Soil Science, Soil Science in the curriculum from pre-school to post retirement classes, and in a number of policy related areas. We hope that there will be contributions from many participants in these presentations and subsequent discussion sessions.

At the Opening Ceremony on July 9<sup>th</sup> we are very pleased to be able to welcome Jeffrey Sachs as our guest speaker. Jeffrey Sachs is an American economist who is Director of the United Nations Millennium Project. Unlike many economists he speaks and writes in a manner in which many people are able to understand his message. In 2005 he produced a fascinating text entitled '*The End of Poverty: Economic Possibilities of our Time*' in which he took an unusual but incisive analysis of the nature of poverty and poverty alleviation. He is currently working closely with Pedro Sanchez to investigate the role of soils in this analysis and in the possible scenarios for ending poverty. If you have read the book or heard him speak you will know that we are exceptionally privileged to have such an excellent speaker to open the World Congress (see interview and book review in this Bulletin).

During the Congress we shall honour the first recipients of our two Soil Science Prizes, the Dokuchaev and Liebig Medals. In addition we shall present to the membership at the Gala Dinner the individuals who have been elected to Honorary Membership of IUSS for their outstanding achievements to Soil Science. I look forward to seeing you at the Dinner to join me in honouring our fellow soil scientists.

Philadelphia is great city with an excellent Conference Center, I look forward to seeing you during the Congress, being able to catch up with old friends, make new friends and most importantly discuss Soil Science and how we can continue the trend of raising awareness of the importance of Soils and Soil Science amongst our politicians both nationally and internationally.

Stephen Nortcliff  
Secretary General IUSS  
Reading, April 2006  
E-mail: [iuss@rdg.ac.uk](mailto:iuss@rdg.ac.uk)



## 18<sup>th</sup> World Congress of Soil Science



Many years of planning have gone into preparations for the 18th World Congress of Soil Science (WCSS), which will take place on 9–15 July 2006 in Philadelphia, PA. Please take this opportunity to share your research, teaching, and service experiences with other WCSS participants. This will be the first World Congress held in the USA since 1960, and every effort is being made to make your participation and attendance worthwhile. The venue is excellent, the program is comprehensive, and there are sufficient scientific, professional, social, cultural, and historical activities for everyone. The WCSS program activities include a pre- and post-Congress tour, numerous mid-Congress professional tours, workshops, and companion and family cultural/history activities. Additional information on all activities can be found on the WCSS website [www.18wcsc.org](http://www.18wcsc.org).

### Theme and Scientific Program

With the WCSS theme, "Frontiers of Soil Science: Technology and the Information Age," the scientific program will focus on soil science advances with an emphasis on:

- remote sensing,
- geographic information systems,
- landscape analysis,
- state-of-the-art molecular-scale analytical techniques,
- environmental soil biology,
- plant/soil interface processes,
- computer and computational modeling of soil processes and reactions,
- precision agriculture,
- and other applications of information science and technology.

The technical program will include over 2,700 oral and poster presentations, which have been assembled into 83 oral, poster theater, and poster symposia. Authors of abstracts recently received confirmation of their paper(s) and format of presentation, and the complete program is now available via the WCSS website, [www.18wcsc.org](http://www.18wcsc.org). Two key interdivisional symposia include Global Priorities of Soil Science Research and Innovation, Speculation, and Disneyfication in Soil Science Education. The education symposium will address soil science education by analyzing trends and developments in various parts of the world. Questions that will be addressed during the symposium are:

- Do we hide our light under a bushel?
- What are the trends in soil science teaching and student numbers?
- How do we translate soil dynamics and its role in ecosystem functioning into inspirational learning products?
- How can we ensure the delivery of well-equipped soil scientists for the future?

Keynote speakers will discuss the possibilities for exciting soil science education in the 21st century with examples from the USA and Australia. This will be followed by a plenary and, undoubtedly, lively discussion. The former symposium will feature leading soil scientists from North and South America, Europe, Asia, Africa, and New Zealand who will discuss soil science research needs and frontiers in their particular region of the world. It will feature both oral and poster theatre sessions.

A new element for poster presentations in this Congress is utilization of poster theaters to enhance their visibility. The symposium convenors/co-convenors will have flexibility in setting the format for the poster theater session to meet the needs of the topic. Some theaters may involve poster authors presenting key points about their poster, discussion led by selected poster authors, or demonstration of software or models. The goal of poster

theaters is to enhance the value, prestige, and image of poster presentations, and even more importantly, to provide an additional venue for the networking and interchange among soil scientists. This is especially important because only about 15% of the papers that will be presented will be given in oral format.

Workshops will be offered to enhance learning skills of participants at the Congress. For example, the International Atomic Energy Agency is sponsoring a workshop entitled "Use of Nuclear Techniques in Addressing Soil-Water-Nutrient Issues for Sustainable Agricultural Production" to promote nuclear techniques that play a significant role in the search for more productive, sustainable, and profitable farming systems. There will be workshops offered to illustrate modern methods for measuring soil moisture and new geospatial imaging analysis of landforms and cultural features.

### **Fellowship Program**

While active registration is beginning, the WCSS Executive Committee has been making a strong effort through a Fellowship program to enhance representation from Category 2 and 3 country participants. A total of \$145,000 has been invested in this program. Prior to the application deadline, a total of 362 Fellowship applications were received from 56 different countries. The Fellowship Committee, chaired by George Van Scoyoc, carefully screened the applications and awarded 148 Fellowships to candidates from 54 countries. This demonstrates the commitment of the 18th World Congress to enhance global participation.

### **Congress Tours**

Two pre- and post-Congress professional tours within the USA will be offered: "Cryosols and Arctic Tundra Ecosystem" and "Acid Sulfate Soils of the U.S. Mid-Atlantic/Chesapeake Bay Region." Other international tours affiliated with the Congress that are scheduled include the IV International Symposium on Deteriorated Volcanic Soils in Mexico. Other U.S. tours were cancelled for lack of participant subscription. However, many mid-Conference tours are offered to enhance scientific, social, historical and cultural values during this Congress.

### **Opening Session**

The opening session will be kicked off by one of America's most illustrious historical figures, Benjamin Franklin, the great inventor, publisher, politician and diplomat, who is celebrating his 300th birthday. Other opening speakers will include Dr. Michael Clegg, the Foreign Secretary of the U.S. National Academy of Sciences; Ambassador Kenneth Quinn, who will recognize the 2006 World Food Prize Laureate; and Dr. Ed De Mulder, Past President of the International Union of Geological Sciences, who will discuss the Year of Planet Earth (YPE) initiative, which the United Nations (UN) recently approved for 2008. The International Union of Soil Sciences (IUSS) is a sponsor of the YPE. Bruce Knight, Chief of the Natural Resources Conservation Service (NRCS), will also address the attendees at the opening session. The plenary address will be given by Professor Jeffrey D. Sachs, the noted economist at Columbia University and author of the acclaimed book, *The End of Poverty*. Professor Sachs is the Director of the Earth Institute at Columbia and serves as Special Advisor to UN Secretary-General Kofi Annan on the Millennium Development Goals.

### **Opening Reception**

The opening reception will be held in the historic Grand Hall of the Pennsylvania Convention Center. This is in the beautiful renovated Reading Terminal Trainshed, the oldest surviving single-span arched trainshed roof structure in the world, and the only one of its kind remaining in the United States. The opening reception will provide an opportunity for soil scientists to gather for food and fellowship, renewing old acquaintances and making new friends. The fun evening will acquaint us with the communities of Philadelphia, which are a melting pot of America. The historical, cultural, athletic, and ethnic flavors of the City of Brotherly Love will be featured, including its food and entertainment.



### **Gala Banquet**

Planning for the Gala Banquet is well underway. It will be an exquisite affair with good food, fellowship, presentation of awards, entertainment, dancing, and fine wine for all. Our entertainment for the evening, the Mahoney Brothers, will take us on a stroll through the history of rock and roll. The Dokuchaev Basic Soil Science Award, the Liebig Applied Soil Science Award, and Kubiena Medals will be presented at this event. Additionally, new honorary members of IUSS will be recognized. The cost of the Gala is significantly subsidized to encourage strong participation. In addition, a lottery will be held to award 100 complimentary tickets to graduate students, registered by 1 May, to attend the Gala. Past participants of WCSS Galas are well aware that this event is one of the highlights of the Congress. This year's event will be one of the best ever.

### **Accompanying Persons**

Registration for accompanying persons is available at the Congress registration site. Accompanying persons will need their name tag for admission into the Convention Center at all times and for the opening reception. Tours throughout the week may be reserved at the Local/ Historical Tours section of the website.

Your WCSS Organizing Committee looks forward to seeing you in Philadelphia. Make plans for the Congress and associated tours now.

### **Wilford Gardner IUSS Congress Fellowship Announced**

The U.S. National Committee for Soil Science announces the Wilford Gardner IUSS Congress Fellowship Program for students and early career researchers (within five years of a Ph.D. degree) attending the World Congress of Soil Science (WCSS), 9–15 July 2006.

Applicants must be the senior author of an oral or poster paper to be presented at the WCSS and enrolled at or employed by a U.S. institution. The number of fellowships available will depend on the amount of sponsor funding; each award is anticipated to be a maximum of \$1,000. The deadline to apply is 19 May.

The U.S. National Committee for Soil Science is a committee of the National Academy of Sciences (NAS) and represents all U.S. soil scientists to the International Union of Soil Sciences (IUSS). The committee named the fellowship program in honor of its founding chair, WILFORD R. GARDNER, who has also served as SSSA president and is a member of NAS. For information on the fellowship and an application form, go to: [www.national-academies.org/usnc-ss](http://www.national-academies.org/usnc-ss). For more information on the WCSS, visit [www.18wcsc.org](http://www.18wcsc.org).

Lee Sommers and Larry Wilding  
Co-chairs, WCSS Organizing Committee

## **Interview with Jeffrey Sachs**

Prof. Jeffrey D. Sachs is the Director of The Earth Institute, Quetelet Professor of Sustainable Development, and Professor of Health Policy and Management at Columbia University. He is also Director of the **UN Millennium Project** and Special Advisor to United Nations Secretary-General Kofi Annan on the Millennium Development Goals, the internationally agreed goals to reduce extreme poverty, disease, and hunger by the year 2015. Sachs is internationally renowned for his work as economic advisor to governments in Latin America, Eastern Europe, the former Soviet Union, Asia and Africa, and his work with international agencies on problems of poverty reduction, debt cancellation for the poorest countries, and disease control. He is a Research Associate of the National Bureau of Economic Research. Sachs has been an advisor to the IMF, the World Bank, the OECD, the World Health Organization, and the United Nations Development Program, among other international agencies. During 2000-2001, he was Chairman of the Commission on Macroeconomics and Health of the World Health Organization, and from September 1999



through March 2000 he served as a member of the International Financial Institutions Advisory Commission established by the U.S. Congress.



Professor Sachs was named as one of the 100 most influential people in the world by *Time* Magazine in 2004 and 2005, and the World Affairs Council of America identified him as one of the 500 most influential people in the United States in the field of foreign policy. In February 2002 *Nature* Magazine stated that Sachs "has revitalized public health thinking since he brought his financial mind to it." In 1993 he was cited in *The New York Times* Magazine as "probably the most important economist in the world" and called in *Time* Magazine's 1994 issue on 50 promising young leaders "the world's best-known economist." In 1997, the French magazine *Le Nouvel Observateur* cited Professor Sachs as one of the world's 50 most important leaders on globalization. His syndicated newspaper column appears in more than 50 countries around the world, and he is a frequent contributor to major publications such as the *New York Times*, the *Financial Times* of London, and *The Economist*.

Prof. Sachs is the keynote speaker at the 18<sup>th</sup> World Congress of Soil Science in July. The IUSS Deputy Secretary General Alfred Hartemink read his book (see review on page 64) and asked him some questions on the Millennium Development Goals (MDGs), soils, and the IUSS.

### **1. How important is the role of science in achieving the MDGs?**

The MDGs have the potential to change the world, not because they represent the good intentions of the world, but because they are actually *achievable*. They are achievable precisely because we already have the scientific knowledge and the technical know-how to meet the Goals. Fighting hunger depends on the scientific advances of soil science, plant breeding, nutrition, and other disciplines. Public health sciences are vital for the progress against disease. Advances in ecology and environmental engineering will play a critical role in enabling the poorest of the poor to gain access to vital infrastructure such as safe drinking water and sanitation.

### **2. Do you think that the donor community is sufficiently appraising the sciences, and do you think that the sciences sufficiently contribute to the MDGs?**

The donor community still has a long way to go in applying good science to achieving the MDGs. Most donor agencies have inadequate links with the scientific community. Often, politics and ideology rather than scientific evidence cloud the responses to the MDGs. Consider malaria, for example. There is ample evidence that the free distribution of long-lasting insecticide-treated bednets (LLINs) is a quick, low-cost and equitable way to reduce malaria incidence and mortality. Yet some donors still insist on selling the nets, a process known as "social marketing," despite overwhelming evidence that social marketing achieves lower coverage rates over a much longer period, and often fails to reach the poorest of the poor. The malaria community has raised this problem for years, but its concerns have still not been adequately heeded.

### **3. In your opinion, how important are poor soils as the fundamental root cause for poverty in many parts of the world?**

Soil degradation and soil nutrient depletion are at the core of low agricultural yields throughout sub-Saharan Africa and parts of South Asia. Africa's rise out of extreme poverty will begin with an African Green Revolution that raises agricultural yields much





closer to potential. Such a Green Revolution will require that the world help Africa to tackle the problem of nutrient-depleted soils. The Hunger Task Force of the UN Millennium Project, headed by Professor Pedro Sanchez and Dr, M. S. Swaminathan, put great stress on enabling the poorest of the poor farmers to gain access to vital systems of soil nutrient management – both through chemical fertilizers and agroforestry methods.

#### **4. Is soil science contributing to achievement of the MDGs, and do the IMF and World Bank also sufficiently recognize the importance of soils and soil science?**

Soil scientists have raised their voice with increasing urgency to call on the IMF and World Bank to revise the agricultural policies of the donor community to address the soil crisis of smallholder farmers in Africa and Asia. For two decades, the World Bank and IMF have looked on passively despite the obvious fact that the poorest farmers were unable to access fertilizer, and were thereby mining their soils of nutrients. This soil mining has by now contributed to a continent-wide crisis in Africa. There must be a return to a subsidy system, in which the poorest of the poor farmers are helped to gain access to vital soil nutrients. Without that, the food crisis in Africa will continue to be horrific.

#### **5. What can the ordinary soil scientist do to help achieving the MDGs?**

Soil scientists working in the field can help to meet the MDGs by working with communities on strategies to raise food yields and agricultural incomes through improved soil management. Soil scientists involved in research can contribute to the MDGs by focusing on developing new and cost-effective techniques to help the poorest of the poor grow more food while preserving soil quality. This can include new systems of diagnosing soil quality as well as improved approaches to tillage and soil management generally.

#### **6. Should the International Union of Soil Sciences have a Working Group focusing on MDG activities?**

The IUSS could indeed contribute to the MDGs by creating a working group to help the world community to understand and address the growing soil crisis in many of the world's hunger hotspots, and to support practical approaches to science-based management of soils in order to improve agricultural productivity and to fight hunger.

## **IUSS Alerts October 2005 – April 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](mailto:alfred.hartemink@wur.nl) Below some of the contributions that appeared in the IUSS Alerts between October 2005 and April 2006.

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#### **Message from the IUSS President, Don Sparks**

The past few months I have had the privilege of attending and speaking at several soil science and geochemistry meetings in Europe and Asia. In September, I attended the Japanese Society of Soil Science and Plant Nutrition (JSSPN) meeting in Matsue and an International Symposium co-sponsored by The Korean Society of Soil Science and Fertilizer (KSSSF) in Seoul. I was encouraged to see many young scientists in attendance at these meetings, and was impressed with the exciting research that is being conducted. However, there were two issues that I heard repeatedly being discussed that should concern not only soil scientists but scientists in general, as well as policymakers and laypersons. These were: 1) the need for increased funding for science; and 2) the decline in students

pursuing undergraduate and graduate degrees in science. Both are critical to our future because science and technology drive our economies. We as soil scientists must be more proactive in articulating in an effective way, not only to policymakers, but also to the general public, why it is critical to the future of our countries and the sustainability of the planet earth to spend more money on scientific research. We must also better engage young students in the excitement of science and encourage them to pursue scientific careers. We are now less close to the 18<sup>th</sup> World Congress of Soil Science (WCSS) in Philadelphia, Pennsylvania, USA. The Congress, scheduled from July 9-15, 2006, promises to be an excellent scientific meeting as well as culturally and socially enjoyable. The 3<sup>rd</sup> announcement has recently appeared ([www.18wcsc.org](http://www.18wcsc.org) and [www.iuss.org](http://www.iuss.org)) and provides details on the symposia, Pre- and Post-Congress tours, Mid-Congress tours, and Companion and Family Cultural/Historical Activities. Abstracts of papers/posters are due December 1, 2005. I look forward to seeing you in Philadelphia, one of America's great cities.

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**New books from the  
International Association of Hydrological Sciences, IAHS**

**Sediment Budgets 1 & 2**

edited by Des E. Walling & Arthur J. Horowitz. A sediment budget provides an integrated view of the sediment sources, transfers, sinks and outputs of a drainage basin, and so draws together the many different aspects of erosion and sediment mobilization, transport, storage and yield.

**Dynamics and Biogeochemistry of River Corridors and Wetlands**

edited by Louise Heathwaite, Bruce Webb, Don Rosenberry, David Weaver & Masaki Hayashi. This volume focuses on the biogeochemistry of the riverbank with special reference to data observation, modelling, and attempts to restore these environments. The international set of research reports and case studies provides a cross-section of work worldwide.

**Bringing Groundwater Quality Research to the Watershed Scale**

edited by Neil R. Thomson. Global and national perspectives are followed by sections dealing with: Contaminant input processes; Site characterization; Management and decision making; Natural attenuation; In situ remediation; and, Flow and transport modelling at national, watershed and smaller scales.

For more information see <http://www.cig.enscm.fr/~iahs/>

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**World Council of Science China 18-22 October 2005**

The World Council of Science (ICSU) was held in Suzhou in October 2005. The Secretary General attended on behalf IUSS. The discussion at these meetings is always wide ranging and includes a large number of essentially administrative matters, but also on capacity building, sustainable development and environment, hazards and the universality of science. There was a long discussion in response to a resolution from the US National Academy of Sciences about 'Intelligent Design'. The conclusion was to condemn the teaching of Intelligent Design or Creationism and dismiss it as a rational alternative to the Theory of Evolution. Within the ICSU Scientific Union Members, IUSS is grouped, for electoral purposes, with Earth and Space Science Unions. This group of unions has now developed closer ties and had a formal meeting in Shanghai prior to the ICSU meeting and a series of informal discussions during the meeting. These meetings and discussions enabled us to develop a strategy to ensure that the voice of our unions was heard within the debates and decision making processes, and was successful. A new member of this group, INQUA, was elected to ICSU Membership. In addition to these Earth Science contacts, the Secretary General participated in discussions with a number of Biological Science Unions on an ICSU supported Initiative on the Science of Health and Wellbeing and held informal discussions with IUPAC about establishing closer ties. The meeting was interesting and it is hoped that these links with the Earth Science and other Unions will continue between meetings, not just at the ICSU Meetings.

Stephen Nortcliff, IUSS Secretary General  
[iuss@reading.ac.uk](mailto:iuss@reading.ac.uk)



### IUSS Website

The IUSS Website with about 10,000 visitors per month has been overhauled and restructured. Information on IUSS activities, people and congresses is listed as well as an overview of upcoming meetings and reports of past meetings. In addition there is a new section on **SOIL PUBLICATIONS** which contains all the book reviews of the past 6 IUSS Bulletins, a list of soil science book publishers, the favourite books of various colleagues, information on soil science journals, soil encyclopaedia, and links to 9 soil glossaries. Under **SOIL INFORMATION** you'll find links to soil data and information, software and models, soil museums, soil societies, soil policies and various links for tropical countries. If you have information to share or websites of interest please send us the information and we'll add it to the IUSS website.

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## The complete work of Charles Darwin online

The complete works of Charles Darwin will be online soon. It will include 42 volumes, and hundreds of shorter publications. His notebooks will also be digitized and all texts will be searchable. Darwin was one of the first to write on soils and earthworms – a classic text still widely quoted in earthworm papers.

Also the correspondence of Darwin and Einstein was recently reviewed (*Nature* vol. 437, page 1251). During their lifetimes, Darwin sent some 7591 letters and received 6530; Einstein sent more than 14500 and received 16200 letters. Staggering numbers – similar to the number of e-mails of today's scientists?

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### Networking in Africa

ICSU (The International Council of Science) has recently established a regional office for Africa under the leadership of Sospeter Muhongo [s.muhongo@icsu-africa.org](mailto:s.muhongo@icsu-africa.org). The office is seeking to coordinate the work of African scientists and those from other parts of the globe actively involved in research and capacity building in the Africa region. Four priority areas have been identified: 1. Health and Human Well-being, 2. Sustainable Energy, 3. Natural and Human-induced Hazards and Disasters and 4. Global Change. The first task is to establish a database of African scientists who are working in these and related fields and of others with strong ties to the region. Colleagues interested in being included in the database should contact [m.pillay@icsu-africa.org](mailto:m.pillay@icsu-africa.org) and [secretariat@icsu-africa.org](mailto:secretariat@icsu-africa.org)

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### European Digital Archive on Soil Maps of the World (EuDASM)

The Institute of Environment and Sustainability (IES) in the European Commission (Italy) and ISRIC – World Soil Information initiated the European Digital Archive of Soil Maps (EuDASM). The objective is to transfer soil information into digital format, with the maximum resolution possible to preserve the information of paper maps. Soil maps are now scanned and available for Africa, Asia, Canada, Caribbean islands, Europe, Latin America, and the USA

Beyond data rescue, the archive aims to develop into a common platform for storing soil maps from around the world and making the information readily accessible. Organisations that maintain soil map archives in paper form, and wishing to conserve this information by transferring it into digital form, are invited to join the EuDASM programme.

Work is on its way to complete the archive in order to achieve global coverage, and further activities include the georeferencing of the on-line maps, to convert raster to vector for GIS applications, and to integrate the maps into (European) soil information systems.

See: [http://eusoils.jrc.it/esdb\\_archive/EuDASM/EUDASM.htm](http://eusoils.jrc.it/esdb_archive/EuDASM/EUDASM.htm)

### 2008 - Year of Planet Earth



The IUSS, as one of the founding partners, is very happy to announce the decision by the General Assembly of the United Nations to proclaim 2008 as the UN Year of Planet Earth. The UN General Assembly adopted by consensus a Resolution by the United Republic of Tanzania and co-signed by 82 nations, to proclaim 2008 as the UN Year of Planet Earth.

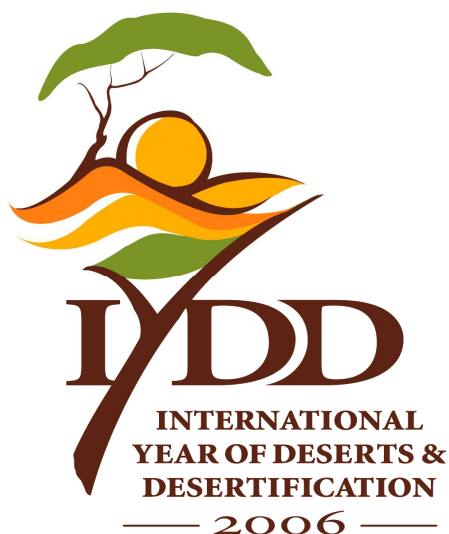
It designates the United Nations Educational, Scientific and Cultural Organization (UNESCO) to organize activities to be undertaken during the Year, in collaboration with UNEP and other relevant United Nations bodies, the International Union of Geological Sciences and other Earth sciences societies and groups throughout the world.

The Assembly encourages Member States, the United Nations system and other actors to use the Year to increase awareness of the importance of Earth sciences in achieving sustainable development and promoting local, national, regional and international action. The International Year of Planet Earth will be a triennium, starting in 2007 and closing by the end of 2009, with the UN Year of Planet Earth 2008 in the centre. For more information see <http://www.esfs.org/>

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### 2006 - Year of Deserts and Desertification

The United Nations launched its International Year of Deserts and Desertification to raise global public awareness of the advancing deserts, of ways to safeguard the biological diversity of arid lands covering one-third of the planet and protecting the knowledge and traditions of the 2 billion people affected by the phenomenon. The Secretariat of the UN



Convention to Combat Desertification (UNCCD) stressed the importance of recognizing that in addition to the human and environmental cost of the degradation that contributes to the problem, the drylands are the location of some of the most magnificent ecosystems of this world: the deserts.

Desertification and drought cause an estimated loss of \$42 billion a year from agricultural production, contribute to food insecurity, famine and poverty and can give rise to social, economic and political tensions that can cause conflicts, further impoverishment and land degradation, according to the Convention's Secretariat. It is widely recognized that environmental degradation has a role to play in considerations of national security, as well as international stability. Therefore, desertification has been seen as a threat to human security.

The Convention's 10th anniversary will be marked in December 1996. Currently, the Convention counts 191 states parties, making it one of the most representative instruments on environmental protection stemming from the 1992 Rio "Earth Summit." See <http://www.iydd.org/>

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### Going to meetings pays-off

No science without scientific meetings. Sometimes the usefulness of scientific meetings is being questioned: too costly, ineffective and most people have internet or even electronic conference facilities. So why bother spending time away from the lab and office?

The time and money spent attending small scientific meetings is more than paid back through accelerated research, suggests a survey of 1,013 participants by a conference organizer. "The presumption is that meetings are beneficial, but the actual data to say that something positive happens are pretty scarce," says James Aiken, of a non-profit meetings organization in Silverthorne (USA) that carried out the survey. Researchers who attended symposia on molecular and cell biology in 2004 and 2005 later saved six weeks of research time and US\$6,000 in funding, according to median figures from the survey. The data



represent a rare attempt to quantify just how effectively small meetings spur research. Meeting attendees said that conferences that are small and highly interactive have particularly high pay-offs compared with larger, more impersonal meetings.

From: Nature: *Nature* **438**, 264-265 (17 November 2005) | doi:10.1038/438264b



### Plagiarism, fabrication, falsification

Fraud is a big issue in science, just think of the stem-cell cloning fraud and its massive media attention. Now there is a new journal coming up that looks at various aspects of scientific fraud. International in scope, *Plagiary: Cross-Disciplinary Studies in Plagiarism, Fabrication, and Falsification*

is a new scholarly journal devoted specifically to the study of plagiarism, fabrication and falsification in the professional literature (i.e. scholarly journals and books) and popular discourse domains (i.e. journalism, politics, audio-visual texts). There has been tremendous interest in these issues but the publications seem to be "all over the place". This new journal will bring together existing strands of scholarship and create a point of focus for lively discussion, ongoing debate, and presentation of research results. For further information see [www.plagiary.org](http://www.plagiary.org) For a discussion on fraud and ethics in soil science publications see *Bulletin of the International Union of Soil Sciences* 97: 36-45 (2000) or send an e-mail to [Alfred.hartemink@wur.nl](mailto:Alfred.hartemink@wur.nl) for requesting a PDF of the article.

### Expression of interest – Science and outreach

The International year of Planet Earth has been approved for 2008 by the UN. There will be a science and outreach programme and if you are interested in proposing either a research or outreach project fill out the Expression of Interest form on the website [www.esfs.org](http://www.esfs.org) You will be contacted when fully worked-up bids for funding can be considered. The IUSS is founding partner of this global initiative.

### National Soil Society Officers Update

Would all National Societies please send to Stephen Nortcliff ([iuss@rdg.ac.uk](mailto:iuss@rdg.ac.uk)) details of their current officers together with postal and email addresses. This will avoid the problem of documentation being sent to the addresses held by IUSS which in some cases may be four or five years out of date.

### Request for contributions

The 13th issue of the Newsletter of the Commission on the History, Philosophy and Sociology of Soil Science of the IUSS (C4-5), which is a combined activity with the Council on the History, Philosophy and Sociology of Soil Science of the SSSA (S205.1), will be published before the 18<sup>th</sup> World Congress of Soil Science in Philadelphia. Suitable contributions, in the form of articles, book reviews, relevant announcements, observations, photographs, requests, etc. could be forwarded to one of the editors: [hans.vanbaren@wur.nl](mailto:hans.vanbaren@wur.nl) preferably as a word document. To read earlier issues, see the website of the IUSS [www.iuss.org](http://www.iuss.org) under IUSS Newsletters.

### Soil science books on Google



Most of us will use the **Web of Science**, **ScienceDirect**, **Scirus** or perhaps **Google Scholar** for a search through the international scientific literature. That is immensely neat and fast but usually does not include books. Google - the holy index to our electronic lives - has started digitising books and make them available through the

internet. That gives a lot of noise with the publishers and libraries, but for us, consumers and producers of scientific information, it is a nice development. Over 3 million book pages on soils are already listed. For more information on Google books see <http://books.google.com/intl/en/googlebooks/about.html> Keep Googling, but don't forget to read!

### Any Pedocasts out there?



Internet is host to a new kind of audio transmission — the podcast. In September 2005, *Nature* introduced the Podcast, which each week highlights a selection of papers and news features with interviews of authors and their peers. Scientists explain their results to a wide audience, in their own words. Their input is augmented by comment and analysis from *Nature* editors and journalists. It's hearing an audio item at a time that suits you, rather than when radio schedules dictate. There are other science podcasts too, from NASA, as well as podcast versions of established radio shows, such as *Science Friday*. There is plenty of interest too.

See <http://www.nature.com/nature/podcast/index.html> for more information on the *Nature* podcasts. *Nature* **439**, 2 (5 January 2006) | doi:10.1038/439002a

We wonder: is there any soil scientist out there that is podcasting ideas and talks on the internet? There are radio interviews (e.g. with Prof. Alex McBratney on the role of soils in the C cycle: <http://www.abc.net.au/rn/science/ss/stories/s1523396.htm> but let us know of other interviews and podcasts and we'll list them on the IUSS Website.

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### Global soil science exposed - Philippines

Soil scientists are active around the world. Some work in the lab, some in the field, some behind the computer screen and some in the lecture room; some do all of that, some do more, some do more or less. In each IUSS Alert, we'll highlight the activities of a soil scientist somewhere on this globe – this month Dr Roland Buresh who is at the International Rice Research Institute in the Philippines who just launched a new website.



Rice is the staple food for billions, and rice receives one third of all fertilizer used in Asia. The International Rice Research Institute (IRRI) and partners across Asia developed site-specific nutrient management (SSNM) as a low-tech, plant-based approach for increasing yield, profit, and nutrient use efficiency in rice farming. SSNM enables rice farmers to optimally supply their crop with essential nutrients while sustaining soil fertility. A new SSNM website features the principles of improved N, P, and K management; tools such as the leaf color chart and nutrient omission plot technique; guidelines for major rice-growing areas; and training materials.

[www.irri.org/irrc/ssnm](http://www.irri.org/irrc/ssnm)

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### New Newsletters of IUSSers

Several of the IUSS Commissions and Working Groups produce regular Newsletters. Newsletters of the Pedometrics Commission and the Working Group on Hydropedology are now available on [www.iuss.org](http://www.iuss.org) section Newsletters. The Pedometrics Commission is also revamping its website [www.pedometrics.org](http://www.pedometrics.org)

The IUSS Bureau encourages website development and Newsletters of its commissions and Working Groups. In the future, we shall open up the IUSS website and make it more interactive allowing contributors to log in and to add and modify content.

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### Writing more effectively

With increasing pressure to publish more, and more effectively, there are also more guidelines for how to do that. Here some examples:

Tomislav Hengl and Mike Gould of the EU Joint Research Centre published *The unofficial guide for authors (or how to produce research articles worth citing)*. It can be downloaded free of charge [http://eusoils.jrc.it/ESDB\\_Archive/eusoils\\_docs/doc\\_other.html](http://eusoils.jrc.it/ESDB_Archive/eusoils_docs/doc_other.html)

Some books:

From Research to Manuscript, written in simple, straightforward language, explains how to understand and summarize a research project. It is a writing guide that goes beyond grammar and bibliographic formats, by demonstrating in detail how to compose the sections of a scientific paper. More details at [www.springer.com](http://www.springer.com)

There is little or no formal teaching about the process of writing grants and many grant applications are rejected due to poor writing and weak formulation of ideas. Procuring grant funding is the central key to survival for any academic researcher in the biological



sciences; thus, being able to write a proposal that effectively illustrates one's ideas is essential. *Guide to Effective Grant Writing: How to Write a Successful NIH Grant* is written to help the 100,000+ post-graduate students and professionals who need to write effective proposals for grants. More details [www.springer.com](http://www.springer.com)

There are also various companies that can help you with your manuscripts. Some of them produce nice Newsletters, click <http://www.sfedite.net/newsletters.html>

## Report of Division 1 (2002 – 2006)

Soils are among the most significant group of natural resources on earth and are important component of the environment. Farmers in Canada say *"The soil has nourished us as it nourishes trees, grasses. I am at home here, it is my homeland. I want to know more about it that I may live more intelligently and in harmony with my surroundings"* (Ransome, 1945). Division I main focus is to obtain better information on the nature, origin, and distribution of soil in three dimensional landscapes. A major paradigm shift is now taking place by changing the emphasis from the farm and farmer to the ecosystem or a unit of the ecosystem (watershed) in technological assistance and technology transfer activities. This does recognizes the fact that the farm is an integral part of the ecosystem. In the last decades, the soil science culture has extended to many other fields in addition to agriculture including: a) cycling bio-geo-chemical, b) buffering the hydrological cycles, c) providing habitat for biota, and d) societal relevance (Yaalon and Arnold, 2000). The importance of soils as a life-support system and in the production of food and fiber was duly recognized (Yaalon, 2000). This is more or less the foundation of the new IUSS structure. In this regards all four Divisions need to give serious attention to integration as much as specialization.

Restriction of our study to the 1-2-m soil profile will isolate soils science from other associated sciences. To understand the complex soil system, soil scientists must go beyond this self-imposed limit to better understand the vertical and horizontal processes taking place on the landscape. We should look to deep ocean floor to establish the pattern of sediment transport from terrestrial environment with time (Mermut and Eswaran, 1997).

Recent international efforts on Global Climate Change and carbon cycles and sequestration require long term monitoring of natural resources, methodologies need to be developed and countries assisted in applying the techniques (Mermut and Eswaran, 1997). Land degradation, either natural or induced by humans is an important concern affecting the wealth of the nations. There is a greater need for land quality assessment and monitoring. Development of data bases and management systems, GIS and remote sensing are evolving, as well as simulation models which are based on soil data base.

**Paleopedology:** We need to continue dealing with ancient and buried soils, as they provide information to reconstruct past climate and development of the landscape. A Paleopedology commission exists within INQUA since 1965. Within ISSS, a Working Group was established a few years later, having the same composition of officers as the INQUA Commission to ensure cooperation with and support from both Unions.

**Pedometrics**, which is the application of mathematical and statistical methods for the quantitative modeling of soils, with the purpose of analyzing its distribution, properties and behavior, has become a distinct area of research. The Working Group sees themselves under the "Provisional Commission on Pedometrics" of Division 1. The Division is the hierarchical supervisor of this provisional commission. At the Bangkok congress, the Working Group on Pedometrics organized symposium 48: "Developments in soil data processing". This included an oral session with 7 speakers and a poster session with 13 posters. The oral session was attended by some 85 to 100 people and the overall quality was of a high standard. The talks were diverse and the speakers came from a variety of geographical origins.

**Soil micromorphology**, although somewhat has lost its initial enthusiasm continue to be essential to provide essential information to both basic and applied aspect of soil science.

## Activities

1) International Symposium on Sustainable Use and Management of Soils in Arid and Semiarid Regions. Cartagena, Murcia, SPAIN, 22<sup>nd</sup>-26<sup>th</sup> September, 2002. This was organized in conjunction with Division III. This symposium was part of the inter-congressional activities of the Division I "Soil in Space and Time" of the IUSS. The symposium was organized jointly by the Department of Agricultural Production of the Polytechnic University of Cartagena, together with the Department of Agricultural Chemistry, Geology, and Pedology of the University of Murcia. More than 250 delegates from about 20 countries have participated in the symposium. The Local Organizing Committee has managed to publish two excellent volumes of the proceedings. The first volume was devoted to invited lectures and the second one was extended summary of all the oral and poster papers. These volumes can be obtained: Prof. Dr. Ángel Faz Cano, Secretary SUMASS2002, Department of Agricultural Production, The Polytechnic University of Cartagena; Paseo Alfonso XIII, 48. 30.203 Cartagena. Murcia. Email: [sumass2002@upct.es](mailto:sumass2002@upct.es) Phone: 34-968 32 54 40; Fax: 34-968 32 54 35 Web Page: <http://www.upct.es/sumass2002>; <http://www.um.es/sumass2002>.

Oral and poster papers, up to a standard scientific level, were reviewed published in the monograph series, Advances in Geocology (No 36) by CATENA VERLAG.

2) International Seminar on Field Examination and Ecological Evaluation of Soils" The seminar will take place at the Leyte State University in Baybay, Leyte, Philippines. In addition to Martin Luther University, Soil Geography Commission of IUSSS, and Leyte State University as sponsors, the Philippine Society of Soil Science and Technology (PSSST) has also expressed interest to co-sponsor the seminar which is now scheduled for April 21-24, 2003. As what is originally planned, the seminar will consist of 1 day lecture and 3 days field work. Many participants from various colleges and universities in the Philippines have participated this meeting.

3) Seventh International Conference on Development of Dry Lands Sustainable Development and Management of Dry Lands in the 21st Century: Under the Auspices of the International Dry Lands Development Commission (IDDC) and Hosted by The Ministry of Jihad-e- Agriculture, the Islamic Republic of Iran Seventh International Conference on Development of Dry Lands: International Center for Agricultural Research in the Dry Areas (ICARDA) Tehran, Iran 14 - 17 September 2003.

4) 8<sup>th</sup> International Meeting on Soils with Mediterranean Type Climate, Marrakech, Morocco 9-11 February 2004. The meeting was jointly organized by Division III of the IUSS. Total 77 papers were presented during this meeting, most of which were devoted to the soils problem of the Mediterranean regions. Previous meetings were held in France (1946), Spain (1966), Turkey (1993), Greece (1993), Bulgaria (1997), Spain again (1999), and Italy (2001). Desertification of the Mediterranean region was one of the striking themes emerged during this meeting.

5) International Conference on Innovative Techniques in Soil Survey "Developing The Foundation For A New Generation Of Soil Resource Inventories And Their Utilization" Cha-Am, Thailand March 22-26, 2004. It was organized by Soil and Water Conservation Society of Thailand and Soil and Fertilizer Society of Thailand and co-sponsored by Land Development Department (LDD) Thailand USDA Natural Resources Conservation Service.

6) Soil Classification 2004. August 3-11, 2004, Petrozavodsk, Russia. The conference was the continuation of the discussion on soil classification in Hungary in 2001. The event included Plenary session and the following oral and poster sessions:

1. The development of WRB,
2. The development of national soil classifications,
3. Anthropogenic soils classification,
4. Numerical and applied soil classifications,
5. Indigeneous soil classifications.





The meeting supported with a field workshop devoted to the problems of classification of Albeluvisols, Podzols, and Histosols. For details the following web site was established <http://biology.krc.karelia.ru/soil04/> and for further details contact [kras@bio.krc.karelia.ru](mailto:kras@bio.krc.karelia.ru)

7) Function of Soils for Human Societies and the environment, Saturday August 21/ 2004. The symposium was organized by the Chairman of Division IV (Dr. E. Frossard) and Division I has supported by papers. The symposium was part of the 32<sup>nd</sup> World Geological Congress in Florence, Italy, 20-28 August 2004.

8) EuroSoil 2004: EuroSoil 2004 in Freiburg/Germany, September 6 - 12, 2004 Conference had a total of 24 Symposia with 7 Symposia were within the main field of the Division I and some colleagues of our division were involved. These were:

- Regionalisation of soil data,
- Forest soils,
- Desertification and salinization,
- Soil information systems,
- Mapping of soil associations,
- Significance of soil forming processes,
- Urban soils and land resources,

There was also 4 Poster sessions one is entitled "Soils in time and space"

9) International Working Meeting on Soil Micromorphology September 20-26 2004 at the University of Cukurova Departments of Soil Science, Archaeometry, Ceramics and Engineering Geology Adana, Turkey.

Themes of the meeting:

1. Soil Quality Indicators for Agronomic Productivity; Environmental Studies,
2. Relationships Between Soil Fabric and Physical Behaviors of Soils,
3. Soil Conservation for Sustainable Land Management,
4. Micromorphometry,
5. Soil Genesis and Weathering of Soil Minerals,
6. Experimental micropedology,
7. Use of micromorphology in Soil Classification,
8. Microscopy of Soil Behavior and Engineering,
9. Interactions Between Living Organisms, Organic, and Mineral Components,
10. Soil Micromorphology of Soils in Arid Regions,
11. Nomenclature, Data recording, Descriptor, and Terminology,
12. Technical and Methodological Aspects of Soil Microscopy and Submicroscopy,
13. Paleopedology Indicators,
14. Role of Micromorphology in Other Sciences (Soil Hydraulics, Pedosedimentology, Geomorphology, Archaeology ,Ceramics, Archaeometry and Archaeoenvironments, Archaeological Sediments).

10) The new Commission Pedometrics had a number of meetings. They were:

- a) International Environmetrics Society & Symposium on Spatial Accuracy Assessment in Portland, Maine June 28-July 1, 2004.
- b) Global Workshop on Digital Soil Mapping. Organized by the International Working Group on Pedometrics <http://sol.ensam.inra.fr/DSM2004> in Montpellier, France, September 15-17, 2004. Contact person was: Phillippe Lagacherie ([lagacherie@ensam.inra.fr](mailto:lagacherie@ensam.inra.fr))
- c) Geostats Congress <http://www.geostats2004.com/> in Banff, Alberta, Canada Sept. 26, 2004.
- d) Pedofract Fractal Mathematics Applied to Soils and Related Heterogeneous Systems. [http://www.itc.nl/personal/hengl/PM/WEB/PEDOFRACT\\_2004.htm](http://www.itc.nl/personal/hengl/PM/WEB/PEDOFRACT_2004.htm) in El Barco de Avila, Spain July 2- 6, 2004.

11) The fourth International Iran and Russia Conference Agriculture and Natural Resources, September 8-10, 2004, Shahrekord, Iran. In total 138 oral and 150 poster

papers were presented. The main topic on soils was the ecology and ecosystem function. The participants were mainly from Iran and Russia. International participation gave the opportunity for wide interactions. Excursions and field trips were very well organized and participants enjoyed observing unimaginable arid and semi arid land forms in central Zagros mountain of Iran.

12) Global Soil Change: Time-Scales And Rates Of Pedogenic Processes, Mexico City, March 10-18, 2005. This meeting was organized by two Commissions 1.3, Soil Genesis and Commission 1.5, Paleopedology together with La Sociedad Mexicana de la Ciencia del Suelo, Instituto de Geología, Universidad Nacional Autónoma de México (UNAM), Colegio de Postgraduados, Montecillo, Mexico, and Institut de Recherche pour le Développement (IRD), in France. It was well attended by Mexican and international participants. The objective of the meeting was to increase our understanding of the pedosphere. It was recognized that the pedosphere and biosphere accelerating changes rapidly require more in depth understanding from the Earth and Life sciences stand point of view. This is the reason why this International IUSS Conference was held in Mexico. The Conference focused attention on time scales and rates of both natural and humanly induced pedogenic processes in relation to the global soil change. Scientific sessions included were:

1. Main concepts of soil systems behavior in time.
2. Chronosequences of soils and paleosols: time-scales for natural pedogenic processes.
3. Rates and characteristic times for modern and ancient human induced pedogenic processes.
4. Time scales of soil – geoforms – biota interactions
5. Experimental modeling of pedogenic processes.
6. Soil dating methods: advances and limitations.

In a final session, a round-table discussion will examine the question: "What are the important gaps in our knowledge on soil and time problem?". The Conference had a three-day program of oral and poster sessions and two (pre and post) conference tours well attended by about 50-60 international scientists. Organizers have done a superb job.

13) Pedometrics 2005: Frontiers in Pedometrics Conference September 12-14, 2005 in Naples, Florida, at the Naples Beach Hotel & Golf Club. Topics were:

- Soil sensor and remote sensor applications
- Interfacing GIS and geostatistics
- Pedometrics interfacing with other disciplines
- Environmetrics applications
- Advances in soil mapping
- Advances in soil sampling and monitoring
- Pedodynamic modeling
- New concepts for soil-landscape modeling.

14) International Conference on Human Impact on Soil Quality Attributes in Arid and Semiarid Regions, Isfahan Iran 12-16 September 2005. The meeting was organized by the Department of Soil Science Isfahan University of Technology, with the cooperation of the Soil Science Society of Iran, Iranian Ministry of Agriculture, the Division I of the IUSS, Swiss Federal Institute of Technology, and FAO. During the meeting 120 oral and 80 poster papers were presented by the participants coming from 20 countries. The conference was a significant step forward towards a functioning scientific network in the context of combating land degradation and conserving or re-establishing optimum soil quality in arid and semi-arid regions. Overgrazing, salinization, desertification, and pollution were considered to be the major causes of soil degradation in arid regions. Besides, urbanization is taking an increasing toll of fertile soil. The participants of the conference underscored the importance of interdisciplinary work in research into sustainable land use and development. However, it was also recognized that disciplinary expertise is a necessary basis for interdisciplinary research. Degradation of land and waters resources is a problem in many parts of the world. It is also of particular concern in Iran. For more information: <http://www.iut.ac.ir/cesoil/>



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Prof. Ahmet Mermut

E-mail: [mermut@skyway.usask.ca](mailto:mermut@skyway.usask.ca)

## **Report of Division 2 (2002 – 2006)**

1. The relationships between the Division Chair and Chairs of Commissions 2.1., 2.2. and 2.5. have run smoothly and constructively during the 4-years term. Unfortunately, it has been very difficult to communicate and get any response/information on activities from the Commission 4 Chair, and often from the Commission 3 Chair. However, the preparation of Symposia to be included in the 18<sup>th</sup> WCSS has run quite fairly and very positively in all cases, also thanks to Commissions' Officers besides the Chairs.
2. The Division Chairman has participated actively at the Executive Committee Meeting held in London, UK, March 31-April 2, 2003.
3. Several Officers of Division 2 have actively participated at the InterCongress Meetings held in Philadelphia in April 2004 and in preparations for the 18<sup>th</sup> World Congress of Soil Science, Philadelphia 2006. The most important issues related to Division 2 were:  
(a) The status of the former WG MO was changed in a new Commission in Division 2, Commission 2.5. "Soil Interfacial Reactions". This Commission has been chaired, until the elections of this year, by the main proposer and supporter of it, Prof. P.M. Huang, former Chair of the former Working Group MO.  
(b) The number and topics of Symposia to be organized for the 18<sup>th</sup> WCSS to be held in Philadelphia in July 2006 were planned and preliminarily defined. After further contacts and refining with the proposed Symposia Conveners and CoConveners, the final list of Symposia of Division 2 was finally defined as consisting of n.4 Divisional Symposia, n.2 for Commission 2.1., n.2 for Commission 2.2., n. 3 (n.2 Oral and n.1 Poster) for Commission 2.3., n.2 for Commission 2.4, and n.2 for Commission 2.5., for a total of n.15 Symposia.
4. The IUSS has sponsored officially the XII International Meeting of the International Humic Substances Society (IHSS), also by organizing joint sessions, which was held in Sao Pedro, Sao Paulo State, Brazil, in July 2004. The Chair and several international members of Division 2 have actively participated in the Conference by presenting invited and oral papers and chairing Sessions.
5. Several, mostly European, members of Division 2, including the Division Chair and two Commission Chairs have actively participated at the Conference EUROSIL 2004, held in Freiburg, Germany, in September 2004. The Commission 2.2. Chair has successfully organized and chaired one of the most attended Symposia of the Conference.
6. A number of European members of Division 2, including the Division Chair, have attended the Conference Rhizosphere 2004, held in Munchen, Germany, in September 2004.

7. Several Divisional Officers and members, especially europeans, have participated as Symposia Conveners and/or CoConveners, lecturers, and poster presenters, at the 2005 European Geoscience Union (EGU) Congress held in Vienna, Austria, on April 24-29. The EGU Division "Soil System Sciences (SSS)"has organized n.12 Symposia, of which several were directly related to IUSS-Division 2 activities. In particular, the Chairman of Commission 2.2. was the Convener of one of the Symposia, and the Division Chair, who is the Chair of a Section of EGU-SSS, was invited lecturer in another Symposium.

8. Several Divisional Officers and members, especially europeans, have participated as Symposia Conveners and/or CoConveners, lecturers, and poster presenters, at the 2006 European Geoscience Union (EGU) Congress held in Vienna, Austria, on April, 2-7, 2006. The EGU Division "Soil System Sciences (SSS)"has organized n.18 Symposia, of which several were directly related to IUSS-Division 2 activities.

9. The possible realization of a IUSS BOOK Series on Trends/Advances in Soil Physics, Chemistry, Biology, Mineralogy was launched. In particular, Commission 2.1 has discussed the possibility to realize a monograph titled "Soil porosity and soil density in relation to water movements".

10. Commission 2.1. published the book: Pagliai M., Jones R. (Editors) Sustainable Land Management – Environmental Protection. A Soil Physical Approach. Advances in GeoEcology 35, 2002. The book contains a selection of papers from the International Conference on Sustainable Soil Management for Environmental Protection. Soil Physical Aspects which was organised in Firenze (Italy) in July 2001, under the auspices of IUSS, the Italian Soil Science Society, the European Society of Agricultural Engineers and the International Commission of Agricultural Engineering. The aim of the conference was to present information and proposals useful to policymakers in the development of future strategies for a sustainable agriculture able to prevent soil physical degradation. Such strategies must take into account interactions between the many forms of soil degradation that up to now have not been adequately considered. Many of the environmental disasters that frequent not only the Mediterranean but also other parts of the world, are the direct consequence of inappropriate land use and management. Conventional systems of agricultural production have in many cases resulted in excessive erosion and other forms of soil degradation and there is an urgent need for crop production to be in harmony with soil conservation and environmental protection.

11. IUSS has been represented by Commission 2.1. at the International Conference "Agroenviron 2004: Role of multi-purpose agriculture in global environment for sustainability", which was held in Udine, Italy, in October 2004, with a session on Soil Physics entitled "Soil physical aspects related to sustainable land management" organized by the Chair of Commission 2.1.

12. Commission 2.1. has actively collaborated with:

(a) Commission 1.1. on the topic "Soil micromorphology and soil hydraulics", and in organizing the 12<sup>th</sup> International Conference on Soil Micromorphology, Adana, Turkey, 20-25 September, 2004;

(b) Commissions 3.4. and 3.5. and with the Working Group on Land Degradation on the topic "Soil physical aspects of land degradation following human activities". This activity focused on the main aspects of environmental deterioration that can be ascribed to soil degradation. In particular, it is necessary to quantify the modification of soil structure in its dynamic evolution. Erosion and soil degradation is still increasing because agriculture has been expanded to soils and areas vulnerable to degradation and is characterised by increasing intensification and heavy mechanisation. On this topics the 5<sup>th</sup> International Conference on Land Degradation will be organised in Italy in September 2008 on the theme "Moving ahead from assessments to actions: Could we win the struggle with land degradation?"





13. Commission 2.2. Chair has contributed to the organization and chaired the International Workshop on "Carbon sequestration and dynamics in agricultural soils", which was successfully held in Nanjing, China, 23-27 October 2003. The meeting was attended by some 100 participants with several scientists from abroad.

14. Commission 2.2. has co-sponsored with the Italian Society of Agricultural Chemistry the symposium "Alfonso Cossa a Portici e la Chimica Agraria In Italia", held in Portici, Italy, on October 25, 2005. This symposium was attended by about 60 participants including scientists from England and Germany. The Proceedings of the symposium were jointly published by the Accademia Nazionale delle Scienze (Italy) and the Università di Napoli Federico II, and were distributed worldwide to National Academies of Sciences.

15. Commission 2.2. Chair has contributed to the IUSS-Bulletin n. 107, under the title: "My favourites in Soil Science – books!". Three books on Soil Organic Matter was recommended.

16. The IUSS-sponsored Symposium "Advances of molecular modeling-Perspectives for soil research" has been held successfully in Vienna, Austria, on October 21-22, 2005, organized by the Vice-Chair of Commission 2.2. Numerous members of the Division have attended, and the Division Chair was a member of the Scientific Committee.

17. An Award for innovative research in Soil Chemistry was launched by Commission 2.2.

18. Commission 2.4. has co-organized with the Australian Clay Minerals Society, the CRC for Landscape, Environments and Mineral Exploration (CRC LEME), the Australian Society of Exploration Geophysics (ASEG) and the Australian Society of Soil Science, Incorporated (ASSSInc - South Australian Branch), a Workshop/Conference on "Clay Mineralogy and Geophysics for Environmental Management & Mineral Exploration (ClayGEMME 2004)", September 27-30, 2004, in CSIRO Land and Water, South Australia. ClayGEMME 2004 brought together over 60 researchers, industry professionals and students with interests in clay mineralogy, geophysics, soil science, environmental science and mineral exploration.

19. The new Commission 2.5., former WG MO, has organized a well-attended Conference, the fourth of the Series, ISMOM 2004, in Wuhan, China, in September 2004. The Division Chair and the Commission 2.5. Chair, and several international members of Division 2 have attended the Conference by presenting plenary and keynote lectures and charing sessions. The Division Chair has also presented an official IUSS Address at the Conference on behalf the IUSS President who could not attend.

20. A number of books have been published under the sponsorship of IUSS Working Group MO (now IUSS Commission 2.5):

(a) The book arising from Symposium 47 "Soil Mineral-Organic Component-Microorganism Interactions and the Impact on the Ecosystem and HumanWelfare", the 17th WorldCongress of Soil Science, Bangkok, Thailand, August 14-21, 2002: Huang, P.M., A. Violante, J.-M Bollag, and P. Vityakon (eds.). 2005. Soil Abiotic and Biotic Interactions and Impact on the Ecosystem and Human Welfare. Science Publishers, Enfield, NH, USA. 439pp.

(b) The book arising from co-sponsored Symposium 02 Biogeochemistry of Trace Elements in the Rhizosphere, the 7th International Conference on the Biogeochemistry of Trace Elements, Uppsala, Sweden, June 15-19, 2003: Huang, P.M. and G.R. Gobran (eds.). 2005. Biogeochemistry of TraceElements in the Rhizosphere, Elsevier, Amsterdam, The Netherlands. 465 pp.

(c) The book arising from the 4th International Symposium of the Interactions of Soil Minerals with Organic Components and Microorganisms and the First Inter-Congress Conference, Wuhan, China, September 20-23, 2004: Huang, Q., P.M. Huang, and A.

Violante (eds.). 2006. Soil Mineral-Organic Matter-Microorganism Interactions: Fundamentals and Impacts. Springer-Verlag, Heidelberg, Germany (In press).  
(d) Special Issue of the journal Biology & Fertility of Soils: Huang, Q., P.M. Huang, and A. Violante (Guest Editors). 2006 (in press).

Prof. Nicola Senesi  
E-mail: [senesi@agr.uniba.it](mailto:senesi@agr.uniba.it)

## **Report of Division 3 (2002 – 2006)**

The establishment of division 3 and 4 does mark a new orientation of IUSS. Division 3 focuses on soil use and management, and division 4 on the relationship of environment and soils. Division 3 includes traditional items of soil science such as soil fertility and plant nutrition, and soil and water conservation. New importance got soil evaluation and land use planning, soil engineering and technology, and soil degradation control, remediation and reclamation. The targets of division 3 are covered by 5 commissions today. To the scope of division 3 are linked several working groups which are in part devoted to particular fields of soil use, such as degradation, salinity, acidity and fertility, and in part to particular types of soil use such as forests and urban areas. These fields and types of soil use are represented each by a working group.

Commissions of traditional objectives in soil science are well established. The registration for the 18WCSS of soil science shows the highest number (322) of presentations by the commission 3.3 - soil nutrition and fertility. Registrations for soil and water conservation themes were also high (148). Similar was found for working groups which had been very successful (forest soils-69 registrations). Younger fields such as soil evaluation and land use planning, soil engineering and technology, and soil degradation control, remediation and reclamation are at the frontier to other fields. Their clientele comes not only from soil science. This can be observed from many interim conferences and workshops between the Soil World Congresses 2002 and 2006. They also address more local acting people and less international active ones.

### **Soil policy**

In the last years one of the most important steps in international soil policy was the establishing of 'Soil Thematic Strategy' of the European Commission. Several officers of IUSS had been engaged in this project which got a strong leadership by the former secretary general of IUSS, Prof. Winfried Blum. The chair of division 3 chaired the task group 'Sealing, Soils of Urban areas, Land Use and Land Use Planning'. Concepts of modern soil conservation were prepared which include also recent and urgent aspects such as contamination, fine dust, heating of cities, storm water infiltration and floods, habitats, drinking water harvesting, sewage water disposal, landfills, sealing by constructions, recreation, sports. An instruction for monitoring of sealed soils was established. The engagement within the Soil Thematic Strategy was at least one of the first steps to introduce modern targets of soil use and management into policy.

### **Workshops, symposia and conferences**

Commission 3.1 – Soil Evaluation and Land Use Planning was on different levels of contact to users of soil information and of scientific presentations of results from soil science active, so in field days, workshops and scientific conferences. In this direction commission 3.1 participated in 4 scientific events, to follow the scientific activities in our interested subjects, had 3 speaks about soil managements, for technicians, farmers and researches, and 3 demonstrations on field about crop systems effects, for technicians and farmers. The commission 3.1 was represented during 2<sup>nd</sup> World Congress on Conservation Agriculture in Foz do Iguacu, August 2003.

Activity in 2005 was to spread the interactions of C.3.1 and IUSS with other organisations and associations. Many talks were carried out and at one seminar in Nazareno Minas Gerais, Brazil on "Soil and development" (03/14/2005) the commission 3.1 acted as organizer.



Commission 3.2 – soil and water conservation: from April 25-27 2005 the 'International Salinity Forum' took place in Riverside, USA. Commission 3.2 was involved in organization and fund raising for this forum. Initiated planning the Forum, hosted by U.S. Salinity Laboratory. Meeting did deal with salinity management of saline soils, including dry land farming and grazing lands. Objectives did include presentation of new technologies and tech transfer, regional strategies for salinity control and socio-economic factors associated with salinity. Targeted audience was to include international representation of scientists, land managers, consultants and policymakers. Meeting co-sponsors were to include USDA- Natural Resources Conservation Service, USDA-Agricultural Research Service, U.S. Bureau of Reclamation among others.

Commission 3.3 – Plant Nutrition and Soil Fertility represented IUSS at the 8th International Symposium of Soil Science & Plant Analysis in Cancun, Mexico, January 30 - February 4, 2005.

Commission 3.4 – Soil Engineering and Technology was in September 2004 active by a symposium 'Soil Deformation' on the EUROSOIL, Freiburg, Germany, and August 2005 active at the international symposium on 'Soil Structure and Amelioration' held in Lublin, Poland. This international symposium was organized by IPAN – Institute of Agrophysics, Lublin. In 2007 the 17th ISTRO Conference in Kiel, Germany, 28 August-3 September will be performed.

Commission 3.5 – was active on 4 meetings:

November 2003, Beijing, China: Contaminants and the Soil Environment in the Australasia Region. This meeting was organised jointly with the Soil Contaminants Research Australasia pacific Network. It attracted scientists from North America, Europe, Asia and the Tasman.

2004, September 2004: Contaminated Site remediation Conference was held in Adelaide. The conference attracted scientists, contaminated site managers and regulators from 18 different countries. Commission 3.5 vice chair and secretary joined hands with the chair to organise this meeting and also to help raise funds for participants from a number of developing countries.

2004, December- the contaminated site remediation conference was organised in Hyderabad in collaboration with the Indian Chapter of Soil Contaminants Research Network. This conference did include both industrial as well as geogenic contaminants. Sodic soil is also part of this meeting.

2005, Sept 19-21: Commission 3.5 organised an international conference in Hungary. The theme for this meeting was degraded soils and the key organiser was Tibor Toth. Unfortunately the conference had to be cancelled. There were only few registrations that time.

Working Group Urban Soils (WG SU/SUITMA) was active by two international conferences on 'Soils of Urban, Industrial, Traffic, Mining and Military Areas': July 2003 in Nancy, France, organized by Jean Louis Morel, Nancy and November 2005 in Cairo, Egypt, organized by Salah Tahoun, El-Zagazig University, and the symposium 'Urban Soils and Land Resources' at the EUROSOIL, Freiburg, Germany, September 2004, organized by the chair of division .

The forth conference of WG SU will be 2007 in Nanjing, China, organized by Gan-lin Zhang, Chinese Academy of Science. The 3 conferences (the first was in 2000 in Essen, Germany) and the symposium marked a clear development from themes dominated by soil pollution to the much wider spectrum of themes of urban, industrial, traffic and mining areas. In Nancy and Cairo soil problems of military areas got particular awareness.

Working Group (former sub-commission) Forest Soils - The working group organised together with other national and international organisations, two international symposia

during this inter-congress period. The first meeting on 'Restoration of forest soils in polluted areas' was held at Prague, Czech Republic, during 26-28 May 2004. Pollution of forest soils through human activities in central and western Europe has a long history but has undergone changes during the last few decades. This meeting had the following objectives: 1. to provide the present state of emission inputs to forest soils, especially in different parts of Europe, 2. to describe and assess the success of various ameliorative measures so far undertaken, 3. to include information from long-term experiments on liming materials and fertilizer additions, and 4. to provide a report with recommendations for future activities including policy matters.

The second at Bordeaux, France, from 15 - 18 Sept. 2004 on 'Forests Soils under Global and Local Changes: from research to practice'. Rationale and aims of the meeting were to describe : (a) the multiple functions of single forest ecosystems in context of landscape management, (b) forest use at the local and landscape levels for productivity, environmental and other functions under changing climate conditions, and (c) adaptations of present management practices and develop future management strategies under changing social and political demands at local, national and international levels.

An international symposium on 'Forest Soils and Ecosystem Health: Linking Local Management to Global Change Challenges' is planned for August / September 2007 at Sunshine Coast, southeast Queensland, Australia (Prof Xu). This symposium will examine: (1) innovative techniques used to simulate and monitor the effects of local management and global change; (2) advances and novel approaches in research technologies; and (3) application and monitoring of these developments at local, national and global levels.

Future activities are role of forests in ameliorating and rehabilitating degraded soils, as sources and sinks in greenhouse gases, in sequestering C in soils by reforestation and in supplying wood for additional demands such as bio-fuels are some of the special challenges facing modern day forest soil science. The research methodologies to tackle some of these issues are of specific nature; sometimes only applicable for forest soils e.g., the study of biogeochemical cycles under low input systems.

Chair division 3 - did focus his activities on conferences about land use aspects, such as agriculture, forestry and urban land use. Main objectives had been presentations about urban soil use as new field of soil science and implications connected with urban soil use. The sustainability of forest soils and important role of soil fertility and soil eutrophication by organic manure for sustainable soil management were other aspects which will have particular importance for the future in division 3. On several conferences well come address of the IUSS had to be presented, sessions to be chaired, the results of conference summarised, general discussion performed, at gala dinner and evening meetings addresses given to officials and participants of the conference. The attendance concerned International Symposium 'Sustainable Use and Management of Soils in Arid and Semiarid Regions', Cartagena, Spain, September 2002;

2<sup>nd</sup> SUITMA- conference 'Soils of Urban, industrial, Traffic, Mining and Military Areas', Nancy, France, July 2003;

8<sup>th</sup> IMSMTC - International Meeting on 'Soils with Mediterranean Type of Climate', Marrakech, Morocco, February 2004;

Inter-Congress meeting of IUSS, Philadelphia, USA, April 2004;

Conference on 'Restoration of Forest Soils in Polluted Areas', Prague, Czech Republic, May 2004;

32<sup>nd</sup> International Geological Congress, Florence, Italy, August 2004, Symposium 'G03.01 - Function of Soils for Human Societies and the Environment';

EUROSOIL, Freiburg, Germany, September 2004, Symposium 'Urban Soils and Land Resources';

4<sup>th</sup> International Conference on 'Land Degradation', Cartagena, Spain, September 2004;

Symposium 'Forest soils under global and local change' Bordeaux, France, September 2004;

Workshop 'Towards a Harmonised Management of European Soil Resources Research Agenda for Soil protection', Vienna, Austria, Oct. 2004;

3<sup>rd</sup> SCAPE workshop on 'Local and Global Actions in Soil Conservation and Protection', Schruns, Austria, October 2004;





International Conference on 'Soil, Water and Environmental Quality Issues and Strategies', New Delhi, India, January/February 2005, organized by the Indian Society of Soil Science;  
Symposium 'The role of Long Term Field Experiments in Agriculture and Ecology', Prague, Czech Republic, June 2005;  
Conference on 'Human Impacts on Soil Quality Attributes', Isfahan, Iran, Sept 2005;  
International Workshop on the 'Status and research Needs for Soil Genesis and Classification' Nanjing, China, September 2005;  
3<sup>rd</sup> SUITMA conference 'Soils of Urban, Industrial, Traffic, Mining and Military Areas', Cairo, Egypt, November 2005.

### Activities for the 18WCSS

The last 2 years commission and division chairs were engaged in preparation of symposia for the 18WCSS in Philadelphia, USA. First of all members of IUSS interested in themes of division 3 had to be encouraged to propose symposium themes and to engage themselves in performance of the symposia. But also themes of potential importance for soil science objectives of division 3 were proposed by the chair of division 3 and commissions of division 3. Division 3 could use this chance to draw more clearly its own profile of a new division within the IUSS.

There is a clear main focus on agricultural land use problems such as nutrient use efficiency and fertilization under of chair of commission 3.3. The two symposia dealing with these items did attract about 28 % of presentations of division 3. Another 6 symposia are devoted to land degradation and attracted about 19 % of presentations. Soil erosion is still a dominant soil problem and attracted 5 % of presentations. Particular soil use such as forest soils did also contribute with 7% in a strong way. The new field soil use of urban area reached already an attraction of about 4 % of presentations. A strong response was also on modern water use problems with about 6 % presentations. The important performance of long term trial as an instrument of soil research in division 3 draw attention of 2 % of the presentations. Problems of salinity, acidity, alkalinity are presented by about 11 %. Themes of land use planning in relation to environment, sustainability, economics and social problems are covering about 12 % of the presentations of the 18 symposia of division 3 and 4 symposia of working groups related to the objectives of division 3. Division 3 is thus on the way to integrate upcoming themes of society and urban-industrial development and its impact on soils into traditional fields of soil use, management and degradation hazards related to them.

Prof. Wolfgang Burghardt

E-mail: [wolfgang.burghardt@uni-essen.de](mailto:wolfgang.burghardt@uni-essen.de)

## Report of Division 4 (2002 – 2006)

On the 28th of October 2004, while taking part in the European Workshop "Scientific basis for the management of European soil resources" in Vienna, Michel Robert secretary of the commission 4.1 passed away. Besides his research, Michel Robert worked a lot in his last years to improve the relationships between soil science and politics at the French and European levels. This is why we particularly appreciated his participation in division 4. We miss him a lot.

### 1. Structure and strategy of division 4

#### a. Organization level

Two business meetings were held with representatives of most of the commissions: the first in November 2002, during the ASA meeting in Indianapolis and the second in November 2003 during the ASA meeting in Denver. The first meeting in 2002 was used to formulate the mission statements and objectives of the division and of its 5 commissions. A "division 4" strategy was also developed after this meeting. We decided to focus our

activity on "promoting interdisciplinary discussions between soil scientists, our colleagues in other scientific disciplines, policy-makers, and concerned citizens on the role of soils in sustaining society and the environment". This was done at 3 levels. At the level of the division this was achieved by organizing meetings where general topics linked to soils were treated in an interdisciplinary manner. At the level of each commission this aim was achieved by organizing more specific meetings. And finally we were approached to identify appropriate persons for giving any necessary inputs, for instance in other ICSU bodies. The second meeting focused on the ongoing activities and on the planning of the next WCSS. Following the IUSS executive committee meeting in London in 2003, Prof E Steinnes, chairman of the "working group soils and geomedicine", was contacted to evaluate if he would be willing to affiliate his WG to division 4. Prof Steinnes showed a strong interest in this and joined the commission "Soils food security and human health" (C4.2).

#### ***b. Communication***

A division 4 web site has been established within the IUSS web site [www.iuss.org/division4/index.htm](http://www.iuss.org/division4/index.htm). Please communicate any relevant information (publications, links...) to be put on the site to Emmanuel Frossard [emmanuel.frossard@ipw.agrl.ethz.ch](mailto:emmanuel.frossard@ipw.agrl.ethz.ch)

Articles have been published in the bulletins of the IUSS, of the Swiss Society of Soil Science, of the CSA, of the IUHPS and of the newsletters of C4.4 and C4.5 to explain the aim of div 4 and/or of its commissions.

### ***2. Meetings and other activities (in chronological order)***

#### November 2002

A joint symposium of the C 4.5 and the SSSA S 205.1 was organized during the ASA meeting in Indianapolis. It was entitled "Aspects of Soil Science History Philosophy and Sociology" and 7 papers were presented.

#### March 2003

Pam Hazelton (C 4.4) gave the keynote address at the Nature Conservation Council of New South Wales' Conference "Ancient Soils -New Solutions".

#### June 2003

Mireille Dosso (C4.4) participated in organizing the meeting for Soil Education ("L'éducation au sol" for AFES (Association Française pour l'Etude des Sol), in Paris. The meeting was supported both by the French Academy of Agriculture and the Ministry of Ecology and Sustainable Development. Stephen Nortcliff (IUSS Secretary General), Pamela Hazelton (from IUSS C4.4), and Alain Ruellan (2nd Past President of IUSS) were invited to give talks.

#### July 2003

Emmanuel Frossard (D 4), Darren Baldwin and Ben Turner organized a meeting entitled: "Organic Phosphorus Characterization and Transformations in the Environment" in Ascona (Switzerland); 60 participants (soil scientists, agronomists, limnologists, ecologists, chemists etc) from all over the world took part. A book gathering contributions of the invited speakers has been published (Turner B, Frossard E and Baldwin DS Editors 2005 Organic phosphorus in the environment, CABI; <http://www.cabi-publishing.org/Bookshop/BookDisplay.asp?SubjectArea=&PID=1793>)

#### July 2003

Lars Bergstrom (C4.1) and Charles Rice (C4.2) participated to the XII world Congress of the International Union of Food Science and Technology in Chicago. The presentation given by L Bergstrom can be downloaded at the following internet address: [www.pe.ipw.agrl.ethz.ch/research/Conf\\_pres/Bergstrom\\_2003\\_IUFoST\\_Chicago.pdf](http://www.pe.ipw.agrl.ethz.ch/research/Conf_pres/Bergstrom_2003_IUFoST_Chicago.pdf)

#### October 2003

E Frossard took part as representative of IUSS in the 2nd meeting of the research group of the soil thematic strategy of the European Union in Wageningen.

#### November 2003

Division 4 of IUSS and Divisions S-11 and S-5 of SSSA co-sponsored in a symposium at the American Society of Agronomy meeting in Denver entitled "Carbon Sequestration by Soils: A Global Perspective on the Underlying Science and Emerging National Policies".



Invited speakers in the symposium included: Christian Feller IRD, CIRAD; David Powlson, IACR-Rothamsted; Keith Paustian, Colorado State University; and Carlos Monreal, Agriculture and Agri-Food Canada. A volunteer poster session on carbon sequestration followed the symposium. The oral session attracted more than 200 participants! The overheads presented by the invited speakers can be downloaded from: [www.pe.ipw.agrl.ethz.ch/research/Conf\\_pres](http://www.pe.ipw.agrl.ethz.ch/research/Conf_pres)

Mireille Dosso (C4.4) prepared a newsletter for Commission 4.4. It can be downloaded from the following internet address:

[www.pe.ipw.agrl.ethz.ch/research/Conf\\_pres/IUSSC44\\_Newsletter\\_1.pdf](http://www.pe.ipw.agrl.ethz.ch/research/Conf_pres/IUSSC44_Newsletter_1.pdf)

Commission 4.5 contributed to the organization of a technical session on the history of soil science with the SSSA Council on History, Philosophy and Sociology of Soil Science at the ASA meeting in Denver in November 2003 that was well attended. The presentations on soil classification history drew over 50 people. The cooperation between C 5.4 and the Division of History of Science of the International Union of the History and Philosophy of Science is going forward by preparing bibliographies of science in different fields.

Mireille Dosso (C4.4) prepared a newsletter for Commission 4.4. It can be downloaded from the following internet address:

[www.pe.ipw.agrl.ethz.ch/research/Conf\\_pres/IUSSC44\\_Newsletter\\_1.pdf](http://www.pe.ipw.agrl.ethz.ch/research/Conf_pres/IUSSC44_Newsletter_1.pdf)

#### February 2004

Commission 4.5 published its annual newsletter to be downloaded from the web site of the IUSS (<http://www.iuss.org/Newsletter11C4-5.pdf>).

#### January 2004

E Frossard took part as representative of IUSS in the 3rd meeting of the research group of the soil thematic strategy of the European Union in Barcelona.

During the last week of April 2004 members of most commissions of division 4 met at the intercongress meeting in Philadelphia to prepare the contributions of division 4 for the 18<sup>th</sup> World Congress of Soil Science.

#### August 2004

Winfried Blum (Austria), Emmanuel Frossard (Switzerland), Benno Warkentin (USA) and Ugo Wolf (Italy) organized a session at the 32nd International Geological Congress in Florence (Italy) that was entitled "Function of soils for human societies and the environment" on the 21st of august 2004. The session chaired by W Blum and E Frossard had 8 oral presentations and 10 posters. About 60 people visited the oral session. All the papers were presented and briefly discussed. The presentations gave a broad overview on soil genesis, soil mapping and on the services soils perform for the environment and the human societies including the conservation of archaeological assets. A special emphasis was made on the relationships between soil science and geology. Finally the European framework for soil protection was presented. At the end a general discussion was held on the definition of soils, and on how soil science and geology could develop more intense collaborations. The posters, all of high quality, dealt with extremely different topics such as mapping, biodiversity, soil pollution and soil degradation... This session contributed to address one of the objectives of the conference that was increasing collaboration between earth disciplines. The overheads of most oral contributions as well as some posters can be found under [www.pe.ipw.agrl.ethz.ch/research/Conf\\_pres](http://www.pe.ipw.agrl.ethz.ch/research/Conf_pres)

The geological society has accepted to publish a book entitled "Function of soils for human societies and the environment" (Eds E Frossard, W Blum, B Warkentin) including most of the presentations made in this session.

#### September 2004

Commissions 4.4 and 4.5 contributed to the organization of the symposium "Soil Education and Public Awareness" at the 2004 EUROSIL in Freiburg, Germany on the 12th of September. The 11 oral presentations of this symposium were well attended. Outstanding posters were presented at this symposium. The poster entitled "soil science meets school" authored by Maria Dell Abate and Gilmo Vianello received the award of the best poster of the meeting! A lot of interesting papers on soil history and soil protection were also given in the symposium "Soil and Society" of this meeting.

#### October 2004

The late Michel Robert and Emmanuel Frossard were asked to contribute with an invited lecture in the meeting "Towards a harmonized management of European soil resources research agenda for soil protection" that took place in Vienna on the 28th and 29th of October. Stephen Nortcliff gave the presentation that Michel Robert should have been given. This was a very moving moment.

Division 4 and Commission 4.5 officially supported the meeting "History and Agronomy: Between Ruptures and Duration" that took place in Montpellier from the 20th to the 22nd of October 2004 at the école nationale supérieure agronomique in Montpellier. The meeting was organized by CIRAD/INRA/IRD and the University of Montpellier III.

#### November 2004

Chuck Rice co-organized a symposium on "Field-to-Region Links of Soil Carbon Dynamics, Greenhouse Gas Fluxes, and Agricultural Mitigation Practices" during the joint meeting of the Soil Science Society of America and the Canadian Society of Soil Science to be held in Seattle Washington November 1-4 2004. Approximately 40 posters were submitted and six oral presentations scheduled with representatives from Argentina, Brazil, Canada, Mexico, New Zealand/Australia, and the U.S.

The SSSA Council on "History, Philosophy and Sociology of Soil Science" and C4.5 cooperated on soil history sessions for the ASA meetings in Seattle. One session, on the Lewis and Clark Trail, had 7 papers. It was the 200th anniversary. It was a surprise to some people that their journals contained observations on soils. Another session on a range of history papers had 19 contributions.

#### February 2005

Commission 4.5 published its annual newsletter to be downloaded from the web site of the IUSS (<http://www.iuss.org/Newsletter12C4-5.pdf>).

#### March 2005

The meeting International Conference on Element Balances as a Tool for Sustainable Land Management: was held in Tirana, Albania, from the 13<sup>th</sup> to the 19<sup>th</sup> of March 2005. It was organized jointly by the University of Agriculture of Tirana, the Albanian Institute of Soil Science, the Swiss Federal Institute of Technology in Zurich (ETH), the Swiss Federal Research Station for Agroecology and Agriculture (FAL) and the Division 4 of the International Union of Soil Sciences (IUSS). It was funded jointly by the Albanian Ministry of Agriculture, the Albanian Ministry of Environment, the Swiss Federal Institute of Technology in Zurich, the Swiss Federal Office for the Environment, Landscape and Forest, the Swiss Development Cooperation Agency, and the Division 4 of the International Union of Soil Sciences. The meeting gathered 90 participants from 18 countries: Albania (44), Austria (2), Belgium (1), Czech Republic (4), France (5), Germany (2), Hungary (4), Iran (1), Italy (2), Latvia (1), Lithuania (1), Netherlands (2), Romania (2), Russia (3), Serbia and Montenegro (4), Slovakia (1), Switzerland (8) and USA (3). During the meeting 30 oral presentations were given by world wide recognized experts and 32 posters were presented. Each oral and poster presentation was followed by intense discussion. The organization of 4 working groups allowed all the participants to contribute to the discussion. Overheads of the oral presentations, the working groups' conclusions and the final conclusions including recommendations to policy makers and researchers are available on the web site of the group of plant nutrition of the ETH Zurich, under [www.pe.ipw.agrl.ethz.ch/research/Conf\\_pres](http://www.pe.ipw.agrl.ethz.ch/research/Conf_pres)

Chuck Rice from commission 4.2 organized a symposium on "Greenhouse Gases and Carbon Sequestration in Agriculture and Forestry" from March the 21<sup>st</sup> to the 24<sup>th</sup>, 2005 in Baltimore, Maryland, USA. The Symposium involved a comprehensive examination of the latest research on sources and sinks of the three primary greenhouse gases (carbon dioxide, nitrous oxide, and methane) related to cropland, forests, rangeland, and wetlands. Abstract, overheads of oral presentations and posters can be found at <http://soilcarboncenter.k-state.edu/conference>.

#### May 2005

Commission 4.5 and Division 4 supported the workshop on the history of soil science entitled "Histoires d'hommes et de concepts en Science du Sol" organized by JP Legros and C Feller of the French association of soil science (AFES) that took place on the 31<sup>st</sup> of May 2005 at the Institut de Recherche et du Développement in Paris. Eight oral presentations



were given two on humus, on the laterite, on the plough, on earthworms, on termites, on the activities at the research station on soil in Versailles and on the vineyard. These presentations have been published in the special issue of the journal *Etude et Gestion des Sols*, AFES, 2005, Vol. 12, N°12, pp. 81-200 with the title "Histoires d'Hommes et de Concepts en Science du Sol". More information on these publications workshop can be obtained from Christian Feller: [Christian.Feller@mpl.ird.fr](mailto:Christian.Feller@mpl.ird.fr)

## 2006

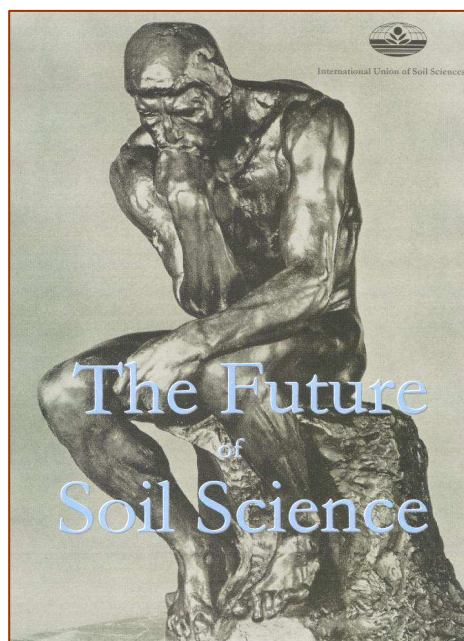
The division 4 is supporting the participation of 10 soil scientists from Africa and 2 soil scientists from Central America by paying their registration to the 18<sup>th</sup> world congress of soil science in Philadelphia. The soil history book prepared jointly by the commission 4.5 and the SSSA "Footprints in the Soil" (B.P. Warkentin and D.H. Yaalon, eds) is to be published in March, 2006 by Elsevier. The book prepared by division 4 «Function of soils for human societies and the environment» (Frossard E., Blum WEH, Warkentin B, Eds) to be published as a special publication of the Geological Society (London) is almost finished. The chapters are in the final correction phase.

Commission 4.5 has been active in attracting a wider audience. This has shown in that several soil scientists in Anthropology and History of Science disciplines are offering to write articles for the next History, Philosophy and Sociology of Soil Science Newsletter, to be printed in June 2006

Prof. Emmanuel Frossard

E-mail: [emmanuel.frossard@ipw.agrl.ethz.ch](mailto:emmanuel.frossard@ipw.agrl.ethz.ch)

## 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 will be freely available for participants of the 18th World Congress of Soil Science in July. Copies can be ordered and cost €25, send and e-mail to [alfred.hartemink@wur.nl](mailto:alfred.hartemink@wur.nl) to order.



## Contributors

### Foreword

Anderson, Darwin (*Canada*)  
Arnalds, Olafur (*Iceland*)  
Arnold, Dick (*USA*)  
Baveye, Philippe (*USA*)  
Bekunda, Mateete (*Uganda*)  
Blum, Winfried (*Austria*)  
Borggaard, Ole (*Denmark*)  
Bouma, Johan (*Netherlands*)  
Breuning-Madsen, Henrik (*Denmark*)  
Burghardt, Wolfgang (*Germany*)  
Coughlan, Kep (*Cambodia*)  
Dobos, Endre (*Hungary*)  
Dumanski, Julian (*Canada*)  
Eswaran, Hari (*USA*)  
Fowler, Richard (*South Africa*)  
Frossard, Emmanuel (*Switzerland*)  
Gachene, C. (*Kenya*)  
Grunwald, Sabine (*USA*)  
Hartemink, Alfred (*Netherlands*)  
Hartmann, Christian (*France*)  
Ibáñez, Juan José (*Spain*)  
Kalra, Yash (*Canada*)  
Kapur, Selim (*Turkey*)  
King, Dominique (*France*)  
Kirk, Guy (*United Kingdom*)  
Kirkham, Mary Beth (*USA*)  
Lal, Rattan (*USA*)

Lin, Henry (*USA*)  
Makeschin, Franz (*Germany*)  
McBratney, Alex (*Australia*)  
McKenzie, Neil (*Australia*)  
Mermut, Ahmet (*Canada*)  
Minhas, P.S. (*India*)  
Nieder, Rolf (*Germany*)  
Noble, Andrew (*Malaysia*)  
Nortcliff, Stephen (*United Kingdom*)  
Petersen, Gary (*USA*)  
Pla Sentís, Ildefonso (*Spain*)  
Powlson, David (*United Kingdom*)  
Rao, D.L.N. (*India*)  
Rashid, Abdul (*Pakistan*)  
Ryan, John (*Syria*)  
Samra, J.S. (*India*)  
Shi, Xuezheng (*China*)  
Sparks, Don (*USA*)  
Swift, Roger (*Australia*)  
Targulian, Victor (*Russia*)  
Thiombiano, Lamourdia (*Ghana*)  
van Meirvenne, Marc (*Belgium*)  
Várallyay, György (*Hungary*)  
Weber, Jerzy (*Poland*)  
Wessolek, Gerd (*Germany*)  
Yli-Halla, Markku (*Finland*)  
Zhang, Fusuo (*China*)  
Zhou, Jianmin (*China*)

### Epilogue

## Proposed plan of the GeoUnions joint science program team on health

As a follow-up to a meeting of the IGU, ISPRS, IUGS, IUSS, and IUGG in Boulder, Colorado in September 2004 the following people [Olle Selinus (IUGS), Amy Budge (ISPRS), Eiliv Steinnes (IUSS), Mark Rosenberg (IGU), Claire Horwell (IUGG)] representing the above-mentioned unions met in Uppsala, Sweden August 31-September 2, 2005. What follows is a proposed plan of the GeoUnions Joint Science Program Team on Health, in the following named the *GeoUnions Health Group*. Geoscience and health (medical geology and medical geography) is a responsibility of all five geounions as will be demonstrated:

IUGS took an initiative when it established a working group on medical geology in 1996; by 2002 it evolved into an IUGS special initiative. It is now developing into a new international association.

The IGU, through its commissions dealing with health and the environment, as well as its national member organizations, has supported research in medical geography since the 1960s. More recently, through the International Symposium in Medical Geography and the ICSU and IHDP sponsored inter-disciplinary projects, *Setting an Agenda for Research on Health and the Environment* and *Health and the Environment - a Crosscutting Issue in Global Change Research*, medical geographers have argued for a broad approach to research on health and the environment including health and the geosciences.



IUGG is active in volcanic health hazard research and water quality assessment through IAVCEI's International Volcanic Health Hazard Network and IAHS' International Commission on Water Quality.

IUSS, dealing with soils, is involved in the links between soils-agriculture and health effects. Also the health effects of global dusts, geophagia etc, just to mention a few aspects, are also of importance to IUSS.

Through Commission VIII/WG2, ISPRS is addressing applications of geospatial technologies for public health. Four of the five terms of reference for WG VIII/2 address public health issues. Activities underway by working group members include: a) ingesting satellite data into dust forecasting models; b) enhancing public health decision support systems using geospatial technologies; c) estimating rangeland health, cropped area, and rainfall for global food security; d) using satellite data to measure chemical composition in the troposphere; and e) studying effects of pollution and assessing risks of disease using satellite data.

### **Goals, activities and actions**

Short-term goals (2005-2008):

1. Make members of the 5 unions aware of the interdisciplinary initiative on health
2. Promote collaborative efforts in education and research among union members
3. Develop a series of activities in preparation for IYPE

Longer-term goals (2005+):

1. Involve the health professions in the GeoUnions health initiative
2. Initiate a series of crosscutting activities with the other GeoUnion joint science program teams
3. Involve other ICSU member organizations in the GeoUnions health initiative

Activities:

1. Publish the plan in relevant newsletters and websites of the 5 unions' and their subgroups
2. Establish a web page with relevant links. Possibly IUGS website.
3. Organize special sessions linked to relevant international conferences
4. Maintain a calendar of relevant events linked to the initiative
5. Organize and conduct a series of international workshops
6. Support and develop courses linked to the initiative
7. Coordinate with IYPE group on Earth and Health
8. Invite the health-related unions and organizations within ICSU to participate in the GeoUnions health initiative
9. Organize activities on crosscutting themes with the other GeoUnions joint science program teams

Actions:

1. Members of GeoUnions health group will seek endorsement of the plan by their respective unions
2. Group leader to request IUGS to host webpage
3. Members of GeoUnions health group request each respective union to publish plan in newsletters and websites
4. Members of GeoUnions to identify relevant events and group leader to post calendar on the website
5. Members of GeoUnions health group to contact relevant conference organizers to arrange special sessions
6. Members of GeoUnions health group to prepare and submit application to ICSU
7. Members of GeoUnions health group will explore other sources of funding for future activities

# **Geo-Unions Meeting 16 October 2005**

## **Shanghai Institute of Geological Science**

### **Present**

Zhang Hongren, Huang Zongli (China), Ron Abler (IGU), Uri Shamir (IUGG), JoAnn Joselyn(IUGG), Sospeten Mohongo (South Africa – ICSU Regional Office) , John Clague (INQA), Eldridge Moores (IUGS), Peter Bobrowsky (IUGS), Orhan Altan (ISPRS), Ian Dowman (ISPRS), Stephen Nortcliff (IUSS), JiangYonghong (China), Ed de Mulder (YPE – after lunch), Robin Brett (IUGS – ICSU Executive Ctte)

Welcome from Minister of Land and Resources read by the Huang Zongli Director of the Bureau of International Cooperation of the Ministry. Welcome from Zhang Hongren, stressing the importance of collaboration amongst the geoscience groupings.

### **Review of Progress since Paris (2004) and Boulder (2004)**

Progress is somewhat patchy. Megacities, Health, Hazards, and Groundwater reported, but Desertification (IUSS) has made little progress. ICSU has now recognised the importance of clusters of science Unions, recognising that the Geo-Unions was a good initiative by the Unions.

*Action 1:* Produce Position Papers on 5 topics.

Health is fully in place; Groundwater is fully in place; Hazards is in place; Cities and Megacities; Desertification still needs to be done; Polar theme proposal of ISPRS. Should we seek to provide them with a template for a work plan? This should be done in as broad a manner as possible. The aim should be an attempt at a Work Plan for each theme.

The aim of this action is the effective development of this theme.

*Action 2:* Approach ISPRS for linkage – done

*Action 3:* Closer ties with YPE

*Action 4:* Groups to meet – incomplete for Megacities and Desertification

*Action 5:* Uri to redraft terms of reference – a sort of 1 paragraph Mission Statement to be prepared this week by the five S-G's for the ICSU meeting.

*Action 6:* Create a Geo-Unions Bureau? IUGS were informed that Norway was removing its support for IUGS or reducing its support. This is being revisited by the National Committee in Norway who are seeking funding for two full time positions. It was suggested (by Zhang Hongren) that China might provide a Geo-Unions Secretariat to co-ordinate activities of the Geo-Unions, to act as a 'clearing house', and possibly managing the web site representing the Geo-Unions. S-G's endeavour to produce a document outlining the 'Terms of Reference' of this proposed Bureau. Peter Bobrowsky to investigate how this can move forward.

### **Status of the Member Unions and the Years**

IUGG preparing for its General Assembly in Perugia in 2007. Well on track for the development of its scientific programme. 220 meetings over 10 days, 7 associations to which be added the Cryospheric Sciences. Will be celebrating IGY plus 50, which project out in to the public and politicians. (Paola Rizzola –MIT). Allocated \$25000 to Geosciences in Africa as seed money, which is an important programme. International Lithosphere Programme has been resurrected by IUGG and IUGS (IUGG has approved the budget (\$17000 for a further 2 year) for ILP). Federation of Astronomical and Geophysical Services (FAGS) consider that recognition with ICSU is beneficial to their activities, but there is a proposal from ICSU to remove FAGS as an ICSU body, but IUGG is that the Geo-Unions should remain as an ICSU Body.

IGU held its Congress in Glasgow in 2004, turnover of the Presidency. Progress on mail ballots so that decisions do not have to be made on a four year basis. At 2008 Congress in Tunis there will be an almost complete changeover of the Council. July 3-7 2006 a regional Conference in Brisbane. IGU is proposing a 'Year' focusing on contacts between the world's great cultures and civilisations. IGU stress the interaction between human beings and the environment.

IUSS 18<sup>th</sup> WCSS in 9-15 July in Philadelphia. We are having dome problems with visas. Linked to NSF we are holding an Open Forum on research in the Critical Zone which will



interest many Unions, we have a similar Open Forum on Education; producing a series of '1 sheet' documents on topics of importance to the public and politicians. Developed closer ties with IAHS. Involvement with IUCN in the development of a draft of a Protocol on the Sustainable Use of Soils' as a first step towards a UN Convention on Sustainable Use of Soils. I am leading a small delegation of European Soil Science Society Presidents to visit the Soil Science Institute in Nanjing.

ISPRS beginning of our 4 year cycle, established a large number of Working Groups, some tied to the Reunion themes. External priorities developing links in developing countries, particularly in Africa (e.g. GIS Africa in Pretoria October 2005), member of UN group 'Peaceful Uses of Outer Space', produced a video promoting photogrammetry and remote sensing, for general public consumption. In 2006 the 8 Technical Commissions will be running mid Congress Symposia, in 2008 July the Congress will be held.

IUGS last Congress in 2004, next Executive Committee meeting will be in Punta Arenas in Chile. Major focus on YPE in the past year, the IUGS has committed \$40000 per year to YPE. IGCP is under review by UNESCO, UNESCO has reorganised its Divisions and Earth Sciences falls in a number of new Divisions, which tends to dilute actions. IGCP will continue but in a different format IUGS has agreed to triple its contribution to IGCP. Next Congress in 2008 in Norway. IUGS has supported a programme on GeoIndicators and Medical Geology over a number of years, but the funding has not been continued, although the GeoMedicine Group has flourished into a body in its own right. GeoParks initiative will be subsumed in to the UNESCO GeoParks activities. IUGS is very disappointed with the way that ICSU deals with the Geo-Unions and the Unions in general.

### **Update on cooperative Reunions Themes**

*Groundwater* (IUGG) Mary Hill (Boulder USGS) has taken over leadership of this group from Yoram Rubin (Berkeley, UofC). There are now five themes. Note that the theme on overpumping in North Africa (link to IUSS Desertification theme), there should also be links with theme 4 'Pollution of groundwater by agricultural fertilizer. Nitrate control in groundwater (Problem and solution, including policy decisions)'. This report may be a model for other reports.

*Hazards* (IUGG) Tom Beer leads on this and on YPE. Need to emphasise to ICSU that this is an ongoing and active initiative which they should recognize.

*Health* (IUGS) Olli Selinus chairs this on the part of IUGS; they held a meeting in late summer 2005. This is a continuation of the last 10 years work by Selinus. The Group is working almost independently of the unions; they feel that they require more information from the unions. How does this fit in to the meeting on Science of Health and Wellbeing (awarded \$50000 by ICSU)? We need to ensure that we draw the linkages between the earth and biological sciences and the medical and clinical sciences. ICSU Agenda for Africa includes Health.

There was a general concern that whilst ICSU has identified these themes will it acknowledge that there are members of ICSU who could make contributions to this programme. Maybe in Africa because the ICSU representative is an Earth Scientist based in South Africa.

*Desertification* (IUSS) Disappointing response from the IUSS representative Rattan Lal, there is a need to identify a new leader, possibly Jose Luis Rubio (Spain) President of the European Society of Soil and water Conservation.

*Megacities* (IGU) Report tabled in 2004. The focus is to balance the human sciences and natural sciences. Frauke Kraas (Germany) is leading on this. Where can Cities and Megacities derive funding?

*Polar themes* Proposed as a Reunion theme area by ISPRS. There are a number of broad themes including the changing status of the Polar Regions, in part using archived images to establish change. There was a feeling amongst Unions that the list of topics was long and would probably require more specific information and perhaps more focus. There are strong links to the IPY programme.

### **Geoscience in Africa**

IUGG decided to focus its actions on Africa. Brought to the Geo-Unions as a possible action for them to consider. When the inaugural meeting of ICSU in Africa (at the opening of the ICSU Regional Office for Africa) was held, IUGG was represented by Merry. The request to ICSU was not for funding but for recognition. IUGG identified through their Finance Committee that the action would require at least \$500000. IUGG voted to allocate \$25000 per year for two years to act as seed corn money. Prior to the opening of the ICSU African office, Uri sought funds from a variety of national and supranational bodies. The next step will be to identify the specifics of the programme. Once there is a programme in place there will have to be a management system in place. Many activities run for the length of the external funding programme, but fail soon after the funding finishes.

### **The Geo-Unions Years**

Year of Planet Earth has been approved for 2008.

IGY plus 50 Is an attempt to celebrate IGY of 1957. What progress has been made in 50 years and where should we go? This will be a focus for 3 symposia in 2007 at Perugia.

Electronic Geophysical Year – a series of foci on data access, data standards, data rescue, accessibility with data, etc. IUSS needs to consider what it is doing in terms of soil maps and general soil data. How does this link to ICSU CODATA Programme.

International Heliospheric Year A look forward of the way forward in space science  
ICSU will be 75 next year and would like to include this in Union publicity

### **UNESCO – Union relationships on the Earths Science Programme in UNESCO – links to IGCP**

Earth Sciences are now in an Ecological and Earth Sciences Division rather than in its own Division, but with topics such as hazards going in to the Basic and Engineering Sciences Division. IGCP falls in this remit, it maybe that this is a welcome 'wake up' call for IGCP to be more focused. Is OPEC a possible funding source (look at the Annual Report of OPEC). Unions need to provide information on their links to UNESCO.

### **ICSU-Union relations**

Robin Brett was asked to give a talk to the Unions Meeting on the Science in ICSU, but the Executive Board would not accept the talk prepared. What were the key points?

1. A very general point raised by some members is the lack of transparency within ICSU.
2. How are the committees selected (both the topics and the membership)? For example the Hazards Committee did not seem to involve any of the relevant scientists (seismologists, volcanologists, etc.), but was strong on social science.
3. How are nominations for ICSU Bodies processed? E.g. SCOPE, SCORE (Ocean Science), SCARE (Antarctic).
4. Change of the subscriptions from \$ to €.
5. What is the advantage of IUSS and other Unions being a member of ICSU? – Possibly 60% of subscriptions arrive via National Academies, as a result of membership of ICSU. Part of an International Scientific Community. ICSU presents an international perspective rather than a national perspective.
6. The action should be to endeavour to transform the ICSU System.

### **New Geo-Unions**

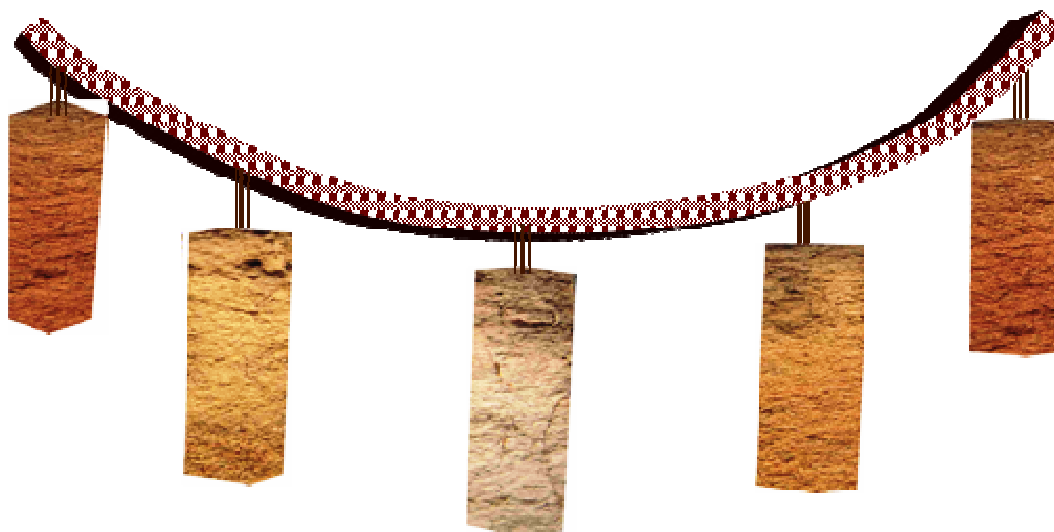
INQUA is a new member with very strong links to the other Geo-Union members.

### **AOB**

How do we enmesh the Science themes from the Geo-Unions in with other activities. The activities should be self financing. E.g. the Desertification activity (IUSS notionally has the lead on this through Rattan Lal) should provide a focus for activity and possibly identify funding activities. Where possible there should be one activity for both the Geo-Union activities and the Years.



## Catena blues by Alex McBratney



### Ca-te-na

String of soils  
Hanging in the landscape  
Necklace of profiles  
Adorning the neck of evolution  
Jewels of transformation  
Twinkling in the half-light  
Of pedogenesis  
Or schlock for deception  
Glistening pretence  
Of the real earth

(Daar is ie weer!)

David van der Linden

### ca-te-na

Function: *noun*

Inflected Form(s): *plural ca-te-nae ; or -nas*

Etymology: Medieval Latin, from Latin, chain  
: a connected series of related things

### cat-e-nary

Function: *noun*

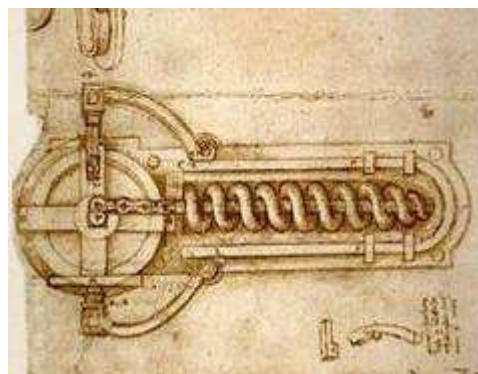
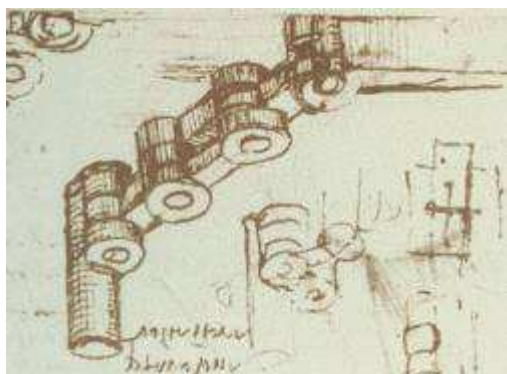
Inflected Form(s): *plural -nar-ies*

Etymology: New Latin *catenaria*, from Latin, feminine of *catenarius* of a chain, from *catena*

**1** : the curve assumed by a cord of uniform density and cross section that is perfectly flexible but not capable of being stretched and that hangs freely from two fixed points

**2** : something in the form of a catenary

- **catenary** *adjective*



Catena acciarino Leonardo da Vinci

## A viewpoint

A review of soil classification systems in different countries (World Soils Reference Base, FAO, etc., included) points out that they present more or less significant as compared to the USDA Soil Taxonomy. These shortcomings are due to their conception from the taxonomic, pragmatic and utilitarian viewpoint especially with the soil surveys at large and intermediate scales. In fact, they reflect just the consequences of their *original sin*, that is, the chronic persistence of some initial concepts characterized by, as expected, an accentuated empirical and eclectic approach based mostly on soil genesis and its factors. Of course, there may be many justifications. First of all, soil science is still one of the relatively young sciences of nature. But, I suppose that the social and economic conditions played one of the most important role in determining the conceptions and in orienting the development directions of soil surveys, especially at large scales for various purposes.

In Russia, the soil surveys were initiated to combat the droughts compromising the agricultural activity and developed under some particular natural and social and economic features. The investigations were carried out on large areas characterized by evident natural zones of climate, vegetation and parent materials where the land ownership was represented by owners of very large agricultural land areas whose land was cultivated by peasants under some particularly unsuitable social and economic conditions. Both the natural and economic conditions allowed, from the beginning, to make soil surveys at very small scales, and as it was expected some soil zones were established. Thus, the first step to define the major soil formation factors happened. That is, the main arguments to establish a new science of nature - *pedology*, with so many beneficial effects occurred. The very attractive theoretical speculations on such findings allowed to make soil maps all over the world. In this way, the soil surveys at large scale for direct interests of the small farmers, were left on the secondary plan, or even neglected with all the negative consequences, whose effects are still experienced in so many countries. The persistence of genetic conception showed its undesirable results.

On the contrary, about at the same time, in USA, the activity of soil survey started under very different social and economic conditions. Most landowners had a land area of a quarter of a square mile per family, and the agricultural production obtained on such a land area had to be the basic resource of their family existence. The history of that time shows many frequent cases of food shortage because the European peasants arrived in America faced various and severe agricultural failures. As a result, state soil survey services were organized. They had as a *major object* to secure the *necessary information* for the intelligent and economic management and treatment of the various kinds or types of soil found to exist. Also, they had to help the farmers to locate soils responsive to different management practices and to decide what crops and management practices were most suitable for particular kinds of soil on their farms. The *second task* was to determine soil resources of the state, that is the agricultural value and the adaptation of the various soils. Thus, from the very beginning, the American soil surveyors had to work at large scales, with very detailed investigations that allowed them to make as precisely as possible the yield predictions and recommendations for the best soil management methods at the level of small farms.

At the same time, the American soil scientists, due to the contributions of Marbut and his followers, managed to better understand that the soil classification should be based on soil morphology instead on theories of soil genesis, because theories of soil genesis are both ephemeral and dynamic. Of course, this does not mean that the soil classifier could neglect genetic principles and relations. He should have in view that a soil is not really understood unless its genesis and the reasons why it varies from other soils are known.

The more or less empirical introduction, as a main taxonomic category of the so called "*soil series*", and the intelligent and continuous scientific improvements of its definition and differentiation criteria opened large horizons for soil surveys at large scales so beneficial for agriculture and so many other purposes. The detailed degree of soil survey may be realized by the fact that a soil series can be defined and differentiated if its land area reaches at least 800 ha. In this way, the American soil surveyors managed, from the very beginning, to answer their initial tasks, especially the increase of agricultural production, accumulating, at the same time, an increasing number of soil series, that recently (1999)



have reached more than 19000, without speaking on soil types and soil phases. As a result of this progress, besides the continuing scientific improvement of conceptions, the American soil scientists managed, among other things, to crystallize the most modern soil classification system - *Soil Taxonomy*.

This explanation showing how the social and economic conditions determined fundamentally the orientation and development of soil classification and survey is not far from the truth, and, anyway, it is in the near future that this statement may be confirmed or not. But, it is evident that the progress based on the conception improvements of Marbut and the others following him make the *Soil Taxonomy* be surely on the right path, fully rewarding the immense efforts invested in its achievements. It should be particularly noticed that, this special lower soil taxonomic category - *soil series* - was not only maintained. On the contrary, much more, during a soil survey activity for more than a century, its concept was permanently tested, retested and improved with positive progress. Practically, from the very beginning, *soil series*, defined and differentiated on the basis of the morphological characteristics, and the physical and chemical properties within the soil profile control section, became the most important taxonomic category with fundamental position, role and functions within the soil classification system. Thus, all these features really impose soil series as a KEY - PIVOT of *Soil Taxonomy* in defining, differentiating and ranking both the taxonomic categories over the soil series level (ascending order: family, subgroup, great group, suborder, order) and the lower subdivisions of soil series (descending order: soil type and phase). I suppose that the time of 1964 year passed, when, at the 8<sup>th</sup> International Soil Science Congress, in Bucharest, R. W. Simonson explained: "*The use of soil series in the classification in the USA is not easily understood by colleagues in other countries who must depend largely on examples in published reports and on occasional journal articles for their information*".

In fact, not yet reached in any other country, the development progress of *Soil Taxonomy* and soil surveys in USA, as a result of a long term activity based on a huge volume of systematic and ordered information and of the computer-controlled 19000 soil series (till 1999) officially accepted, registered and stored in an exemplary and systematized framework, constitutes a model of a national pedological treasure, largely recognized also as a significant contribution to the world scientific pedological treasure, so necessary for the sustainable human society development.

All these lead to the idea that has come that this issue be considered also at the world level. First of all, similar to the other measurement units such as meter, kilogram, liter, second, etc., *soil series*, in a unitary definition, internationally accepted and adopted, could be internationally considered as a basic conceptual unit from the soil taxonomic viewpoint. Undoubtedly, in this view, a soil series, let say Miami, or any other series in USA, for instance, could be also identified in any other part of the world. As a result, every country, adopting this taxonomic category, including all its connections in *Soil Taxonomy*, can build its own new soil classification and survey system comparable and compatible at the world level. All such new soil series, internationally identified and recognized, within the territory of each country, besides the known 19000 or more soil series only in USA, could be stored in a computer-controlled world bank of soil series that could reach, probably, 50000 or more soil series all over the world. Under these conditions, there is the possibility to build a world interactive internet platform regarding the world soil resources with special view to soil series. Such a platform could ensure, among others, the aggregation of the results of soil surveys and syntheses regarding their evolution, the harmonization of methods to make, correlate and interpret the soil surveys, and the public information on available data of soil resources.

These propositions could be also considered as a serious warning that the time has come to call on the United Nations General Assembly to Establish an Intergovernmental Negotiating Committee to prepare a Convention to Inventory, Protect, Improve and Sustainably Use the World Soil Resources.

In fact, all these measures, integrally, systematically and holistically approached could constitute the real first world action step to globalize the activity regarding the sustainable

use of world soil resources, one of the ineluctable measures for a sustainable social and economic development at national and international levels.

There are many other arguments in this view. It is quite well known that as we have entered the new century and millennium, we are facing new trends and problems of global dimensions which demand new approaches and better scientific and technological knowledge to find solutions regarding also the soils which deserve important consideration owing to their overwhelming influence on many aspects of human life and activity.

Unfortunately, the pressing necessity of an internationally accepted soil classification system contrasts with the limited number of soil scientists who are really aware of the fact that *the soil series could be a basic taxonomic category* of such a system to classify the soils which play a key role as a foundation of the landscape, as a key factor in food production and as a factor with particular influence on the most important environmental problems of today, such as climate change, loss of biodiversity, desertification processes and the water cycle alterations.

Stelian CÂRSTEA  
Scientific Secretary,  
Section of Soil Science, Land Reclamation and Environmental Protection,  
Academy of Agricultural and Forestry Sciences,  
Bd. Mărăști, 61, sector 1, Bucharest, Romania.

## The Italian celebration of the 2005 World Soil Day

The Italian celebration of the World Soil Day (5<sup>th</sup> December 2005), was held in the Aosta Valley, a small alpine region in North-Western Italy. The meeting was organized by the Italian Soil Science Society (SISS), with the cooperation of the Italian Society of Pedology (SIPe) and the collaboration of the University of Turin and local authorities. The objective of the meeting was to make the public aware of the significance of soil as a resource and of the need to protect it. The program included the presentation of the activities carried out on soil by primary and secondary school students. Those activities were also presented in a specific movie called "Il Di-Vertisuolo" (*divertire* in Italian means to have fun; in this case to have fun playing with the soil); the base of the project was to *learn having fun* through simple experiments which allowed to discover the main soil properties such as pH, texture and aggregate stability.

During the meeting a specific educational book on soil called "Il Suolo che Vive" (The Living Soil) was also presented, edited by the Soil Education and Divulcation Committee of the SISS. The book is composed by a series of chapters, which introduce to the principles of soil science by a simple language and a lot of funny images. More than one hundred people participated in the meeting, revealing the importance of such events for the divulgation of soil science and the developing awareness of the importance of soil for societies.



M. Freppaz  
University of Turin - Italy





## Are soils an important component in land use change?

Public awareness of soils and soil science was unfortunately always a neglected issue. Thus when the American magazine SCIENCE published in June 2004 a special issue on SOILS - The Final Frontier, which included several significant article pointing out the importance of soils to ecosystems and its history, it was welcomed by many as a sign of change. Yet, a year later when a global review on the consequence of land use was published (Science, July 22, 2005) there was no mention of the consequences of land use and land use change on soils. Professor Dan Yaalon, emeritus of the Hebrew University of Jerusalem, was upset about it and prepared a Letter to the Editors of Science. After some delays in correspondence the Editors decided that it was not significant enough and rejected it for publication. Yaalon has also on other occasion promoted the public awareness of soils. Yaalon believes that the letter draws attention to an important issue of soil use and that it deserves wider distribution. Several people expressed surprise at the rejection by *Science* and one of them, Prof. Roger Pielke Sr., Colorado State University, reprinted it with some additional comments by him on land and soil use change on climate. It is reproduced on his weblog <http://climatesci.atmos.colostate.edu> for December 19, 2005, under *Climate Science*. Here is his letter:

### Land use is always accompanied by soil change

The global review by Foley, DeFries and others on consequences of land use (22 July, p. 570, with ample online supporting material) is valuable, summarizes well the major current features and includes hints on developing future strategies. However for some reason it neglects to discuss the impact on soils due to changes in land use. Soils are a major factor in land use and the important link between climate and biogeochemical earth systems (1). Hence land use practices and land cover change are always accompanied by soil change. Not only the carbon and hydrologic cycle but equally the soil and sediment cycles have been and are being changed by human land use practices over time. Is this not significant enough to review ? Why this slant on biodiversity decrease and no mention of the possibly equally significant reduction and soil quality attributes change (2)?

With nearly half of the earth land surface now drastically changed to arable land and pastures (currently 12% and 25% respectively, with additional large percentage areas of managed and polluted forests), the respective surficial soils have changed their original nature and pedological properties, and some must now be differently classified (3). While largely turning more productive, some were degraded and certain soil varieties have become endangered or even extinct, like any other biota. This was surely worthwhile to draw attention to as consequence of changing land cover surfaces.

Pedology (soil science) is a relatively young branch of the earth sciences (1, 4) and because combining both the bio-geo-chemical and physical aspects, soils developed into an exceptionally complicated system of ecosystem functions, including applied services for mankind, as the several recent articles in Science (11 June 2004) so well demonstrated (5). Statistical evaluation of pedodiversity, partly analogous to biodiversity, is a growing topic in soils (3, 6). We must not neglect to consider soils appropriately in any global, regional or local context.

Dan H. Yaalon  
Institute of Earth Sciences, Israel.  
E-Mail : [yaalon@vms.huji.ac.il](mailto:yaalon@vms.huji.ac.il)

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## **Five Questions to a Soil Scientist**

### **Five Questions to Jan Hopmans**

Name: Jan W. Hopmans  
Age: 52  
Address: Department of Land, Air and Water Resources,  
University of California Davis, CA 95616, USA  
E-mail: [jwhopmans@ucdavis.edu](mailto:jwhopmans@ucdavis.edu)  
Position: Professor of Vadose Zone Hydrology (since 1988)



#### *1. When did you decide to study soil science?*

As an undergraduate student I was majoring in Hydraulics and Hydrology at Wageningen University. While in my fourth year or so, I talked with my room mate who majored in Soil Science, and was studying under Professor Gerry Bolt. It was then that I took my first upper division course in Soil Physics, taught for the first time by a team consisting of Peter Raats, Johan Bouma and Chris Dirksen. Although very challenging, together they offered me plenty of reasons to continue in Soil Science. Subsequently, I enrolled in a 6-month project with Dr. Toon Janse, to conduct a field study on the application of radar to evaluate soil moisture. This was done in collaboration with the Delft Technical University.

#### *2. Who has been your most influential teacher?*

After my undergraduate studies in Wageningen I pursued a PhD in Soil Physics with Dr. Jacob Dane at Auburn University, Auburn, AL. With him, I studied the coupled transport of heat and water using dedicated laboratory experiments using gamma ray radiography. Jacob taught me much of being well prepared, dedication and details. After accepting my current position at the University of California, Davis, I was mentored by Dr. Don Nielsen for the first 5 years so. He learnt me valuable lessons about the need to be innovative in your research and teaching, and how to conduct research while doing administrative work at the same time.

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

When starting my Soil Science career as a graduate student, soil physics was unique, as the movement of water in soils and associated transport was generally studied by soil physicists only. However, very soon thereafter, it became clear that improved understanding of flow in soils was needed for engineering and general environmental applications. We started to read about soil studies done by scientists other than soil scientists, including hydrologists and environmental engineers. I find the most exciting part of my profession to work towards integration of soil science with other, related sciences.

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

I would like to emphasize that soil science is a global earth science discipline, linking the atmosphere with the land surface through exchange of heat, gases and water. Through the study of soil science and its integration with other disciplines such as hydrology, engineering, agronomy, ecology, atmospheric science and environmental sciences, we can better solve societal problems such as air quality, climate change, biodiversity, water



quality, sustainability of irrigated agriculture, and other environmental changes at local, regional, continental and global scales.

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

The future of soil science is on the balance, so to speak. I am convinced that Soil Science by itself has little future. Soil Science programs are disappearing globally, because of low student enrollments. Yet, there is a very clear future for soil science expertise as soil science knowledge is required to effectively solve the societal problems listed under (4). Therefore, I urge academic programs to seek the integration of soil science with other related curricula. Moreover, we should convince the scientific community that soil science is a critical component of the earth's environmental system. Existing academic programs with a Soil Science degree should seek ways to ensure continuity of their unique Program.

## Five Questions to Miroslav Kutilek

Name: Miroslav Kutilek  
Age: 79 years  
Address: Nad Patankou 34  
160 00 Prague 6  
Czech Republic  
E-mail: [miroslav.kutilek@volny.cz](mailto:miroslav.kutilek@volny.cz)  
Position: professor since 1973, now pensioned



*1. When did you decide to study soil science?*

After my graduation at the Civil Engineering in 1951, I started my professional career at the Department of Irrigation and Drainage, Czech Technical University in Prague. I discovered early that my creativity in this domain was rather limited by the extent number of norms and regulations. In addition to it, I was curious about the laws of soil water flow and behavior. And this part was generally neglected at that time in water engineering practice in our country. I have therefore decided to focus my PhD. research to soil physics and I performed mainly laboratory experiments on the influence of urban waste waters upon the soil structure. My studies were realized under the guidance of professor L. Smolík, a soil scientist. The laboratory soil testing was an exciting experience and I have continued further on in research of soil physics. Later on, when I was teaching in Prague as well as in developing countries I had to extend my studies to the general soil science, too. This knowledge contributed to my effort to perform the research on real soils and in the field, too.

*2. Who has been your most influential teacher?*

My approach to the research in soil physics was dominantly influenced by Dr. Ladislav Smolík, professor of soil science at the Czech Technical University in Prague. He has introduced me into the global concept of soil science and into the neo-positivist and Popperian principles of scientific discovery. Without quoting the philosophers, Dr. Smolík followed the deductive ways in research and he stated repeatedly: First the theory and then the experiments. Later on, when I was sometimes hesitating about my steps, there were discussions with Dr. D.R. Nielsen in which I found a support of my views. The book Soil Hydrology was the final product of our discussions. I am sure that the book would not appear without the general input of L. Smolík and without the opportunity to share the same point of view upon soil physics with Don Nielsen.

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

Even if soil science is a sort of the Cinderella of natural sciences, it has one principal feature in common with them: It is an open epistemological system. We meet all the time new problems to solve and what is very important, we find frequently the immediate

practical applications of our research in agronomy, forestry, water management and ecology. There are so many branches of natural sciences which could envy us this opportunity.

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

We have an immediate chance to get the teenagers engaged in soil science. There exists the GLOBE program of international cooperation aimed at the observation of nature and ecology: GLOBE (Global Learning and Observations to Benefit the Environment) is a worldwide hands-on, primary and secondary school-based education and science program. Soil science is among the subjects in which the students, mainly teenagers take field measurements. The students send their measurements into the data base in USA and they have the opportunity to compare their results with data from other countries since they obtain all measurements professionally evaluated, plotted etc. The program is realized in 104 countries. I am recommending to the soil scientists to get informed and to contact the local committees of GLOBE, see [www.globe.gov](http://www.globe.gov) or [www.globe-europe.org](http://www.globe-europe.org). This chance is perfect as I can confirm from my personal experience.

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

A very popular and general opinion on soil science is that soil is a sort of reservoir keeping the nutrients for plants and that the soil scientists take care of that reservoir. We have the chance to change this very narrow and not proper public meaning in the frame of UN Year 2008 of Planet Earth. I am urging soil scientists to contribute readable and popular information on advances in soil science into newspapers and into all media.

The research in soil science brought good knowledge in individual sub-disciplines as soil physics, soil chemistry, microbiology etc. The time is therefore suitable for interdisciplinary approaches where the tools of one sub-discipline contributes to the knowledge of the neighboring sub-discipline. Let me give one example on pollutants:

The accelerated flux of pollutants, the preferential flow within the soil profile can be understood only if the soil porous system is properly described in its full complexity. This aim is not attainable without the knowledge on soil micromorphology, which is linked to pedogenesis. Pollutants are transported in soils to deeper horizons where their accumulation, transformation and decontamination processes differ from the conditions in the root zone. Rates of various processes depend upon the properties of individual horizons, which are directly related again to pedogenesis. Thus the knowledge of soil genesis and of the properties of soil taxons is indispensable for the description of pollutant transport and transformation in soil. The variation of hydrophilicity and hydrophobicity due to transformed organic matter, root exudates and enzymes also plays an important role in transform processes of pollutants on pore scale. The pollutants alter the physical and chemical properties of soils, act either directly upon the soil edaphon, or indirectly through the microbial activity being influenced by changes of the soil solution. And the changed soil properties impinge upon the diversity and activities of soil microbiological communities. Even if the complicated processes are truly identified, knowledge regarding the nature and intensity of induced changes is not transferable from one taxonomic order to another. In addition to pollutant transport, soil physical characteristics are changed directly by the quality and concentration of the soil solution. The influence of inorganic cations upon the change of soil hydraulic characteristics is well known in relation to salinization and alkalization. More should be known on the role of products of humification upon the hydraulic functions of soil. Similarly, our knowledge on the role of organic pollutants in changing the soil porous system and soil hydraulic characteristics is insufficient. The change is either direct as is the case for organic cations, or indirect through the stimulation effect of particular species of the soil micro-edaphon.

Finally, we should not forget about our role in protection of pedo-diversity. It has the same importance as bio-diversity, but it is less frequently formulated.



## **My favourites in Soil Science – books!**

### **The favourite books of Phan Thi Cong (Vietnam)**

Books are at great value to us because in my country, accessing scientific books is limited. I found all books have their own value and they open a new path in soil science for me anytime I read them. Therefore it is difficult for me to answer which are my three favourite books.

The book on 'Management properties of Ferralsols' by A. Van Wambeke and published in 1974, amazed me when I started my work on this soil group. In Vietnam, this soil group has been considered as very fertile due to their well-drained characteristics and high organic matter content. However, this is not always true as these soils are fragile, and a lack of knowledge on the physical and chemical characteristics of these soils could lead to bad management. The book has compiled all the information available on Ferralsols: their properties, the experience accumulated on their management, and their production potential for intensive agriculture.

I found that the 'Soil Fertility Kit: A toolkit for acid, upland soil fertility management in Southeast Asia' by Thomas Dierolf, Thomas Fairhurst and Ernst Mutert, and published in 2001, is a very useful handbook that enables researchers, extensionists, farmers, policy and decision-makers to understand their soils and to take quick action on the management practices needed for sustainable production. Besides explaining the principles of soil fertility management, the book also provides critical leaf nutrient concentrations for N, P, K, Ca, Mg and S in 45 crops. Balanced-fertilisation rates of N, P, K, Mg, S and organic matter are also recommended for these 45 crops. Colour plates for diagnosing nutrient deficiency in a few key crops are also included.

Soil degradation is occurring day by day in the tropics. Organic matter amendment has been suggested as one of the best options to ameliorate soil fertility decline and to improve soil structure. Defining the constraints of soil fertility to crop production and recommending best management practices needs an insight into the interaction between soil minerals and organic matter and the activities of soil micro-organisms. I could find many answers to my questions in the book on 'Interactions of Soil Minerals with Natural Organics and Microbes'. This book is the Proceedings of a Symposium sponsored by Divisions S-9, S-2, and S-3 of the Soil Science Society of America in Washington, DC, 15-16 August, 1983, and was published as the SSSA Special Publication Number 17 in 1986. All authors linked the chemistry of mineral constituents to the transformation of organic substances under the activities of microbes and their interactions. Although I am not familiar with all the methodologies described in the books, the mechanisms and processes occurring in the soil body, and invisible to the naked eye, are a constant source of amazement to me.

### **The favourite books of Pete Smith (Scotland, UK)**

Working in a multi-disciplinary field like global change, I must say that I do not read many pure soil science books. Indeed, many soil science books now cover more ground than the traditional soil science books of 20 or 30 years ago – they have to – science has changed and we no longer work within our strict disciplinary boundaries. I think this is a good thing. Soil science is no longer seen as an obscure and marginal field of research, but an extremely important component of wider ecosystem, environmental and earth sciences. We now see countless papers referring to soils as the critical and uncertain component of our understanding of earth system feedbacks, which has raised the profile of soil science dramatically over the past 20 years.

My first book choice is an excellent example of soil science in the wider context. Richter & Markewitz's book "Understanding soil change: soil sustainability over millenia, centuries and decades" uses the Calhoun Forest Experiment as its basis. Yet, the book is not simply

an excuse to describe a long-term experiment. They use the knowledge gained from this experiment, and place it in a global context using a wealth of knowledge spanning many hundreds, even thousands, of years. The spatial scale of the book is equally impressive; taking examples from Calhoun, the authors make observations on soil sustainability that are derived under the particular circumstances of their experiment, and demonstrate how these principles hold true in many regions of the world. The book effortlessly spans spatial and temporal scales and draws on subject matter that even the most widely read soil scientist will be unlikely to have considered previously. The book demonstrates the rich wealth of knowledge that long-term experiments can provide, and is a shining example of how this data can be used to educate students, researchers and the public, on a range of environmental issues.

My second choice is Brady & Weil's "The Nature and Properties of Soils", currently in its 13<sup>th</sup> edition. This is an undergraduate textbook, but like many soil scientists, I came to soil science from another discipline, without specifically studying soil science as an undergraduate or postgraduate! As such, I often need to go back to basics when outside my particular area of expertise. Brady and Weil's book is encyclopaedic but very accessible and clear. It is especially useful when one is lecturing on soil science. I am often feel that there is much more that I do not know about soil science than I do know, but Brady and Weil always help me out.

My third book choice is "From this Soil, Selected Poems by Walt Whitman". A copy of this book was given to me at the first soil science conference I organised in 1995. It contains great poems and great art. It puts soils (and nature more widely) in the human context.

#### *Details of the books*

1. Understanding soil change: soil sustainability over millenia, centuries and decades by DD Richter, Jr. and D Markewitz. Cambridge University Press, Cambridge, 2001. Hardbound, 255 pp. ISBN 0 521 77171 4.
2. The nature and properties of soils, 13<sup>th</sup> Edition by N.C. Brady and R.R. Weil. Prentice Hall, Upper Saddle River, New Jersey, 2002. Hardbound, 960pp. ISBN 0 13 016763 0.
3. From this soil. Selected poems by Walt Whitman. C. Gudis (ed.). The Nature Company, AME Publishing Ltd, New York, 96pp.

### **The favourite books of Jetse Stoorvogel (Netherlands)**

In this digital era, I experienced the changing role of books. Knowledge is rapidly acquired through the web and where books used to play an important role in summarizing research results scattered around in various journal articles inaccessible to many of us; it is the journal articles that in many cases have become more accessible on the web than many of the books. That is probably why I most frequently use books as a basic reference instead of finding those key research results.

The question to pick my three favorite books could not have been more appropriate. Our Laboratory of Soil Science and Geology is just facing a move to a new modern building characterized by small offices and little space. Which books do I take along if I could only take three? After gazing for a few minutes to the various bookshelves behind my desk, I decided to select my basic reference books: my soil science dictionary, my basic fact book, and my guidebook in the complex world of statistics.

While teaching soil science, I am frequently challenged to provide that single definition of a soil science term. Often terms that are being used frequently in a whole array of different settings and a quick google provides me with a plethora of slightly different –or in some cases very different- definitions. On these moments "The Glossary of Soil Science Terms" published by the Soil Science Society of America in 1997 provides me guidance.

In similar moments of confusion, I am scratching my head for that little fact or number in soil science or agriculture. I am still surprised how often the "Booker Tropical Soil Manual" compiled by J.R. Landon and published by Longman in 1990 helps me out. I am still surprised how often I find my basic facts in this fact book. Finally, I can not leave my office without taking my favorite statistics book along. J.C. Davis provides me with the standard work in the second edition of his "Statistics and Data Analysis in Geology" (published by John Wiley & Sons, Inc in 1986. One of those books that explain statistics in a way



understandable for the non-statistician and that illustrates it with examples from our line of research.

Does this mean that I leave my office with a brief case with three books and a computer. Probably not, there are so many other nice books behind me, but it certainly was an interesting exercise to pick three.

## **Pakistani soil scientist honored with prestigious Borlaug Award**

At the occasion of the World Food Day, Dr. Abdul Rashid, Chief Soil Scientist at Pakistan's National Agricultural Research Center has been honored by the Government of Pakistan by bestowing the prestigious Borlaug Award – 2005. This singular honor, carrying a handsome cash prize, has been conferred in recognition to his outstanding contributions in micronutrient research. Dr. Rashid is a distinguished soil scientist with more than 30-year research experience and 200+ publications. He is a world figure in micronutrient research, and his innovative research and effective writings have moved the science forward. For example, contrary to general perception, he has established boron deficiency in cotton and rice calcareous soils of Pakistan, and has mapped boron deficient areas using geostatistics. He determined that actual internal boron requirement of cotton is 3-fold than listed in international literature. Also, he has established plant analysis diagnostic criteria for many field crops, and his publications have played a guiding role for soil-plant testing laboratories in Pakistan and the Central & West Asia and North Africa region.

Dr. Rashid is a strong advocate of balanced fertilizer use, including micronutrients. His micronutrient management technologies on "Boron use in rice", "Boron and zinc use in cotton" and "Zinc-enriched rice nursery" have been recommended and got adopted in the country – with highly remunerative returns.



Dr. Rashid is current President, Soil Science Society of Pakistan, and an Editorial Board Member of two international journals. Already, he is a recipient of many coveted honors like East West Center (USA) Distinguished Alumni Award, PARC Scientist of the Year Award and IRRI's Best Paper Award.

## **Gleb Vsevolodovitch Dobrovolskii 90th birthday**

On September 22, 2005 the 90-th anniversary of G.V. Dobrovolskii was celebrated. G.V. Dobrovolskii is an Honored Professor of the Moscow State University, an Honorable President of the Dokutchaevev Soil Science Society, and the Director of the Ecological Soil Science Institute of the Moscow State University.

The celebration in honor of G.V. Dobrovolskii came about at the Faculty of Soil Science, Moscow State University, with participation of more than two hundred official representatives of higher education and scientific research establishments and Russian Academy of Sciences.

In complimentary addresses outstanding scientific merits and managerial activities of G.V. Dobrovolskii aimed at the development of soil science in Russia were emphasized as well as his great contribution to the training of specialists in soil science.

On the occasion of the 90-th anniversary G.V. Dobrovolskii received many greetings from his foreign colleagues – soil scientists.

G.V. Dobrovolskii has worked out the theoretical foundations of the genesis, classification and efficient utilization of soils of floodplains. He explored the ecological and geochemical characteristics of soil formation and soil evolution in valleys and deltas of the rivers in the European part of Russia and in the Western Siberia. For the Western Pricaspian area G.V. Dobrovolskii revealed the main trends in temporal and spatial dynamics of the soil cover on the basis of lithological, geomorphological, and geochronological zoning of the territory. The long-term prognosis of the development of soil salinization was given ("Geochemistry, reclamation and genesis of the Terek river delta soils").

G.V. Dobrovolskii has evolved the theoretical principles and methods of soil geography and soil-geographical zoning following the traditions of Russian soil science. He has worked out a multistage system of the soil-geographical zoning – from the geographical zones to soil districts and regions. On this basis many soil maps and maps of soil-geographical zoning have been compiled for the whole territory of Russia and for individual areas (1965-1985).

G.V. Dobrovolskii has formulated the fundamental concept concerning the ecological functions of soils in the biosphere. This concept provides a basis for the development of a new branch of soil science – "Structural and functional role of soils in the biosphere" (1999) disclosing the global functions of the soil cover and the influence of soil processes on lithosphere, hydrosphere and atmosphere. A specific role of soils as a natural habitat for living organisms and the prime importance of soils in the preservation of the species diversity in the natural systems are emphasized.

G.V. Dobrovolskii made an important contribution to the development and application of new methods and tools in soil science including methods of remote sensing as related to studies in soil geography and cartography, methods of micromorphology and those of biological diagnostics of soils. G.V. Dobrovolskii is the author of more than 400 publications including 12 monographs, he is a co-author of many soil maps.

G.V. Dobrovolskii's great scientific contributions were confirmed by election him as a full member of the Russian Academy of Sciences. He was twice awarded the State Prize of Russia in Science and Technology.

G.V. Dobrovolskii is the organizer and the first Dean of the faculty of soil science (1973-1993) in the Moscow State University. Today it is a large-scale establishment where about 500 students and about 100 post-graduate students study and 280 professors, lecturers and research officers work. G.V. Dobrovolskii delivers the lectures in courses "Soil geography" and "History and Methodology of Soil Science". He is also the author of the textbooks in these disciplines.

G.V. Dobrovolskii performed a great scientific and managerial activity as the President of the Dokutchaevev Society of Soil Science (1988-2004). He is the editor-in-chief of the Journal "Pochvovedenie" (Soil Science).

According to the President V.V. Putin's decree G.V. Dobrovolskii was awarded the National Honorable Order "Za zaslugi pered Otechestvom" (Order of Merit to Motherland) on the occasion of the 90-th anniversary.

The Dokutchaevev Society of Soil Science wishes G.V. Dobrovolskii good health and further successful and efficient scientific and public activity.

## Jacques Neeteson President of the International Fertiliser Society

At the recent Annual General Meeting of the International Fertiliser Society held in Linz, Austria, Dr. Jacques Neeteson from Wageningen University and Research Centre was elected President of the Society for the 2005/2006 season.

The International Fertiliser Society was founded in 1947 for individuals who have a professional interest in any aspect of fertiliser production, marketing and use. Membership is personal and is open to all. There are currently about 600 members from the industry, private companies and research organisations. The members originate from almost 50 countries world-wide. The objective of the Society is to provide an international forum for discussion and dissemination of knowledge of scientific, technical, environmental, economic and safety aspects of the production, marketing, use and application of fertilisers.



*Dr Kish Shah and Dr Jacques Neeteson*

The Society organises several meetings per year. The scientific and technical papers presented at the meetings are published as the Proceedings of the International Fertiliser Society (ISSN 1466-1314) and now number over 500 in total. The subjects covered range from raw material mining and shipping, through fertiliser plant design, production techniques, distribution and marketing, to fertiliser usage, crop production and environmental management. The published Proceedings of the Society Meetings are one of the major publicly available sources of information on fertiliser production and use, and on crop nutrition.

Jacques Neeteson is manager of the business unit Agrosystems Research of Plant Research International at Wageningen University and Research Centre, Wageningen, the Netherlands. Agrosystems Research has built a reputation on the design, development and testing of systems for sustainable agriculture and land use in The Netherlands, Europe and developing countries. Its scientific research ranges from studies of nutrient and herbicide management strategies, and water and energy use to studies of adaptation to climate change, food security, multifunctional land use and green care.



## Megh Goyal the father of irrigation engineering

Annual Meeting of The Puerto Rico Chapter of American Society of Agricultural Engineers [ASAE] was held on September 16 of 2005 at University of Puerto Rico – Mayaguez Campus. At this meeting, Dr. Megh R Goyal, PE was recognized as: “Father of Irrigation Engineering in Puerto Rico” This recommendation was based his achievements during the years 1979 – 2005. Dr. Goyal received his BSc degree in 1971 from Punjab Agricultural University – India; MSc degree in 1977 and PhD in 1979 from the Ohio State University; and Master in Divinity in 2001 from PR Evangelical Seminary. He is also registered professional engineer in Puerto Rico. Dr. Goyal is a founding Chairman of this society in Puerto Rico. He started as Agricultural Engineer in 1979 with University of Puerto Rico – Mayaguez Campus [COLEGIO] to do research, teaching and extension related to DRIP IRRIGATION. At present, he is a full professor of General, Agricultural and Biomedical Engineering at COLEGIO. Currently, he teaches courses in General engineering at this university. Dr Goyal has published more than 180 publications in professional journals; two bibliographies on Drip Irrigation; a text book on “Management of Drip Irrigation (Spanish)” with 21 chapters; and four books on “Biomechanics Engineering of Human Body”. More information can be found at his webpage:

[www.ece.uprm.edu/~m\\_goyal/home.htm](http://www.ece.uprm.edu/~m_goyal/home.htm) Dr Goyal has offered technical knowledge to develop and manage “Climatological data for application in Puerto Rican agriculture”. His work on Agroclimatology, Evapotranspiration and Drip Irrigation is a pioneer work on which irrigation systems are designed, developed and managed in Puerto Rico. The simplicity of his publications helps students as well as technicians to apply knowledge in irrigated agriculture. He is a cooperating editor of International Journal AMA {Agricultural Mechanization in Asia, Americas and Latin America}. Number of his publications in irrigation for Puerto Rico has exceeded than publications by any other engineer during the 20<sup>th</sup> century. Among agriculturists and technicians, he is nicknamed as: DRIP IRRIGATION MAN OF PUERTO RICO. Recently, he has applied his knowledge in Agricultural and Biological Engineering to “ENGINEERING BIOMECHANICS of HUMAN BODY”. In the past, Dr Goyal has received national and international recognitions such as: Best Graduate Student [1976] at Ohio State; Researcher of the Year [1981] by PR Society of Agricultural Sciences; Researcher of the Year [1989] by Gamma Sigma Honor Society; Blue Ribbon Award [1983, 1986, 1991] and Research Award [1983] and Young Engineer of the Year [1987] and Grand Prize Winner [1992] by ASAE; and Rashtraya Ratan Award [2002] by Friendship Forum of India. First congress on “Biofluid Dynamics of Human Body” at COLEGIO was dedicated to him.



From left to right: Agricultural Engineers Paul L. McConnie, Megh R Goyal, Rafael F. Davila, Francisco Monroig, Eric Harmsen, Carmelo A. Gonzalez and Hector Lopez.

Paul L. McConnie, PE  
President of Nominating Committee, 460 Calle Sagrado Corazón  
San Juan – Puerto Rico

## Ahmet Mermut SSSA Fellow

Dr. Ahmet R. Mermut, FCSSS and FSSSA was recognized as a Fellow of ASA and presented the SSSA International Soil Science Award at the 2005 ASA-CSSA-SSSA International Annual Meetings Salt Lake City, UT - November 6 – 10, 2005. Dr. Mermut, who is well known to the Canadian and Turkish Soil Science circle, served as president of the CSSS in



2003. His program focused mainly in the area of pedology, geochemistry, and land resources especially in developing arid and semi arid regions of the world. He has actively participated in the land resources use and management in South America, Africa, Near East, and Asia through the Canadian International Development Agency's (CIDA), UNDP, and FAO as part of joint efforts between universities, developing countries, and international development program agencies.

Dr. Mermut has authored and co-authored more than 150 refereed journal articles, 15 books, 14 book chapters and nearly 200 abstracts presented in scientific meetings. Dr. Mermut served as an associate editor and editor for Canadian Journal of Soil Science, Clays and Clay Minerals, and Scientific World. He is active in soil science societies in many developing countries and was Chairman of the Commission V of the International Society of Soil Science (ISSS) and currently the Chairman of Division I, Soils in Time and Space of the International Union of Soil Science (IUSS). This is an extraordinary achievement for this eminent scientist and fitting recognition for his lifetime scientific achievements at the international level.

## In Memoriam

### Hassan M. Hamdi 1912-2003

Prof. Dr. Hassan M. Hamdi, who died on the 7<sup>th</sup> November 2003 at the age of 91 years was the president of the Egyptian Soil Science Society for over 50 years and was selected as honorary member of IUSS since 2002. He was born in Cairo on January 18, 1912. He obtained his B.Sc. in Agriculture Science from Cairo University 1935. Granted a mission to study his Ph.D. from the Federal University of High Technology (Soil Science), Switzerland 1942. Joined the staff members of Cairo University as Assistant Professor, Associate Professor and granted Prof. 1956.. He moved to Ain-Shams University to establish a new-department of Soil Science, 1958, selected as Vice-Dean 1964 then Dean 1967 to 1970. Fac. Of Agric. Ain Shams University. He was selected as a director of a new Department of Soil Science at Al-Azhar University 1973-1975. Member of the German Academy of Science 1961 and member of the Egyptian Academy of Science 1978 and a president 1989.



Teaching courses at the Institute of soils of the humid regions, Libzig 1960 and Frankfurt Institute, Germany 1962. Established the Egyptian Soil Science Society (ESSS) 1950, that joined the ISSS to be elected as a president for over 50 years. ESSS coordinate and encourage cooperation of scientific and social activities among 500 members. He was elected as a permanent president of the ESSS in all his life. Edited the Egyptian Journal of Soil Science since 1961 as Secretary and Chairman of the Editorial Board. The Egypt. J. of Soil Sci. is edited in four volumes yearly since 1984. Supervisor for over 200 students for M.Sc. and Ph.D. degrees from Cairo Univ., Ain Shams Univ. Ministry of Agriculture, The National Research Centre and Desert Research Institute. He established several Research activities and working groups in the field of Clay mineralogy, Soil genesis Mapping, and finally Remote sensing. Help in establishing the remote sensing center of the Ministry of Agriculture 1981- 1993. The center staff members were trained in Holland, Italy, USA and Canada .They were active in mapping of different regions of Egypt. Prof. Hamdi published 150 scientific papers since 1943 and published several books in Arabic in the field of soil science, the was the principal investigator of several National projects sponsored by the Egyptian Academy of Science and Technology, Ministry of Agriculture and UN Development Programs. Such projects were of great academic and practical application for the development of agriculture in Egypt. Prof. Hamdi was able to establish the following:

- Evaluation of the total Agricultural area grown with different crops in Egypt for three successive years.
- Evaluation of total Agriculture area of Egypt (about 7.5 Million Faddan).
- Evaluation of the borders of several cities and villages in the Delta area.
- Preparing a map of the Delta area about salinity status of different areas.
- Recording changes of one of Nile branches (Rasheed branch) from 1947 to 1992.

Prof. Hamdi Granted the highest National Award in Agricultural Science from the National Academy of Science and Technology, 1988. Granted a promotion certificate and Medal from FAO for his activities in the field of Soil Science and water that contributed in the development and maintaining sustainable Agriculture 1989, 1990 and 1993. Selected as Soil Science Expert by the Academy of Science and National Technology. President of the National Soil Committee, ASRT. The ESSS Awarded him its Medal in 2000. The IUSS granted him the honorary membership.

### **Richard Drees 1941-2005**

Dr. L. Richard Drees of Bryan/College Station, TX, died on October 31, 2005 after a lengthy illness. He was born in Columbus, Ohio, March 8, 1941 to Lawrence and Marianna Drees. He attended The Ohio State University where he received Bachelor and Masters Degrees. He, along with his family, moved to Bryan in 1977 for employment in the Soil and Crop Sciences Department, Texas A&M University, and pursued a PhD in soil science which he received in 1986. Following graduation, Richard remained at Texas A&M University in a Research Scientist position where he worked closely with students and colleagues in the Pedology area. He served as a Visiting Scientist, Department of Agricultural Chemistry and Soil Science, University of Sydney, during 1996. Dr. Drees was recognized as one of the foremost leaders and authorities in soil micromorphology and soil mineralogy. His work with students and co-workers contributed to the understanding of soils in over 18 countries. He pioneered studies on soil spatial variability with major emphasis on mineralogy and elemental variability, conducted seminal studies using microradiography to establish mineral inclusions in organic and inorganic structures, used silica minerals as unique markers for paleo-environmental reconstructions, documented dust contributions and consequent pedogenic impacts on soils of Texas and West Africa,



modeled the flux and mechanisms of soil inorganic and organic carbon mass balances with relative sequestration roles, verified micromorphic impacts of tillage and soil management on soil architecture and porosity dynamics, and determined the parameters responsible for landscape stability in Steeplands of Central America.

Richard was a prolific writer and his services in strong demand. He authored or co-authored 22 scientific book chapters, along with 30 journal articles, and worked tirelessly to improve the visual representation of micrographs and soil profiles used in classroom settings. He was a leader and strong contributor to numerous professional societies including: Soil Science Society of America where he served as an Associate Editor of SSSAJ and Chair of SSSA Division S-9, American Society of Agronomy, International Association for Study of Clays, Sigma Xi, Texas Association of Professional Geoscientists (Licensed PG as a Soil Scientist), International Soil Science Society, International Union of Soil Sciences, and Professional Soil Scientists Association of Texas (charter member). He contributed inordinately to the International Working Group on Soil Micromorphology.

Survivors include his wife of 40 years, Janice Drees of Bryan; a son and daughter-in-law David and Diane Drees; two daughters and sons-in-law Karen and Walt Medlock and Cheryl and John Hopson, a sister Carol McConnell and 5 grandchildren.

Mrs. Janice Drees can be contacted at 3800 Woodmere Drive, Bryan, TX 77802, USA.

### **Pavel Jambor 1938-2005**

On 9<sup>th</sup> June 2005 a few days before the opening of the Fourth Pedological Days in Slovakia deceased the long-term scientific worker of the Soil Science and Conservation Research Institute in Bratislava (Slovakia), excellent applied soil scientist, president of Slovak Soil Science Society (Societas pedologica slovac) Dr. Pavel Jambor, PhD. The Slovak soil science community lost one of the outstanding scientists who considerably contributed to the soil science development and land management in Slovakia.



Born in Potvorice at Vah river valley, Pavel Jambor started his career with studying at Agronomical faculty of the Slovak Agricultural University in Nitra (1957-1962) where he attained his Dr. phil. degree in 1974. In the years 1964-1971 he worked in the Soil Science and Plant Nutrition Institute in Bratislava as soil surveyor at the General Soil Survey of Agricultural Soils of former Czechoslovakia. Thereafter, in the years 1971-1975 was shortly employed as technical specialist at the State Melioration Service in Bratislava. Since 1975 he anchored in Soil Science and Conservation Research Institute in Bratislava till his death. He was entrusted by several significant posts here, as a head of the

scientific info service (library), as a leading person in the Pedological consultation centre and three times as deputy director of the institute. He retired in 2001, but he was actively involved in scientific and institute activities for years to come.

He acted as a president of the Slovak Soil Science Society (Societas pedologica slovac) for some elective periods (1992-2005). He was foundation member of Pedological section of the Slovak Society for Agricultural, Forest, Food and Veterinary Sciences at the Slovak Academy of Sciences (1973), acting as a member of Czechoslovak Agricultural Academy (1964-1989) and member of the Slovak Academy of Agricultural Sciences (1993).

He also chaired the Soil erosion working group in COST action, in ArgeDonau international program, co-ordinator of international and national scientific projects referring to physical soil degradation, prominent specialist in soil erosion oriented to soil protection, author of the Manual for anti-erosion and control agrotechnics systems. In his work, there was established a very fruitful symbiosis of pure soil science and practical soil and land assessment with aspects to provided services for farmers. There were famous his newspaper articles published for agricultural practice, also he serviced as editor of many scientific proceedings of the institute. He is author and co-author of approximately 120 scientific publications, contributions including four books: „Main factors of land production potential (1984)“, „Soil and plant nutrition (1985)“, „Methodology for anti-erosion land

*management (1998)", „Aspects of the Erosion by Water in Austria, Hungary and Slovakia (2003)". There remained his incomplete four-language pedological dictionary, which will be issued in memoriam after its adjustment.*

His high reputation as especial applied soil scientist was acknowledged in Fandly medal in memoriam (2005), Diploma for soil science development of the Slovak Academy for Agricultural Sciences. He was active in membership of several scientific institute boards, international societies (IUSS, ECSSS, ESSC).

We regret to have lost Pavel Jambor. His memory remains with us and his work will be a source of inspiration for those that will follow in his steps.

Jaroslava Sobocka  
president of Societas pedologica slovac

### **A. Duncan Scott 1921-2005**

A. Duncan Scott, 84, of Batavia, Illinois and Professor Emeritus at Iowa State University died Saturday, November 12, 2005. A private family service was held on November 17. He was a professor in the Agronomy Department from 1950, and in retirement moved to Illinois in 2002. Scott grew up on a farm in Saskatchewan, Canada, and began his education in a one-room country school. Graduating from high school when he was sixteen, he had to wait a year to continue his education at the University of Saskatchewan because he had to be a year older to enroll. He devoted this year to traveling and studying music before starting university study.

Encouraged to develop a broad perspective on soils, including the relevance of chemistry and physics, by John Mitchell, head of Soil Science, Scott also was encouraged to gain experience with soils as they exist in the field. The latter was by working with the Saskatchewan Soil Survey in the summer of 1942, and the BSA degree in soils at Saskatchewan earned in 1943. His ongoing attention to soils was interrupted by service as a Second Lieutenant in the Canadian Army. After military service, he returned to the University of Saskatchewan to take graduate courses.



During that year, interactions with faculty members led Scott to pursue a doctoral program emphasizing the chemical aspects of soils, but only after working with the Saskatchewan Soil Survey again in the summer of 1945. Of his soils career he said: That interest "has been my life."

In his words, Scott moved "about as far away" from Saskatchewan as he could in 1945, to begin graduate work at Cornell University, Ithaca, New York. There he was a graduate assistant with Dr. Michael Peech, whose research program matched his interests in soil chemistry and clay mineralogy. Scott married Elizabeth Camper in 1946 and graduated with a doctorate in Soil Chemistry in 1949. He found several university positions in Soil Science available so he could choose among them.

The Department of Agronomy at Iowa State University, under the leadership of W. H. Pierre was nationally and internationally recognized as having one of the best programs. In addition, study of soil chemistry was being moved from the Chemistry Department to Agronomy and a newly created position in soil research and teaching became open. He joined the faculty at Iowa State University and organized a new Soil Chemistry program in the Agronomy Department. When he retired in 1990, a national interest in this position was still evident.

Rising through the academic ranks to professor by 1959, Professor Scott's career at Iowa State spanned 41 years. He developed and taught a graduate course in advanced soil chemistry and participated in graduate soil seminars. He pursued a research program involving the availability of potassium and ammonium in soils and minerals to plants, the structural and surface chemistry of layer silicates in soils, and the development and application of electrochemical methods of determining soil potassium. Scott was a Fellow



of the American Society of Agronomy and the Soil Science Society of America, and served as associate editor for the Soil Science Society of America Proceedings and for Clay and Clay Minerals. He has also been Chairman of the Soil Science Society of America Division 9 and Vice-Chairman of Commission VII of the International Society of Soil Science.

Dr. Scott's expertise was frequently sought by international agencies. He worked as a Technical Expert in Soil Chemistry for the Food and Agriculture Organization of the United Nations (UN) in Pakistan in 1961-62, where he organized and supervised analytical laboratories and soil chemistry research for the UN Special Fund Project. This was an "enlightening" year for him that he considered one of the highlights of his career. Scott also spent a year in Adelaide, Australia as a Visiting Scientist with Commonwealth Scientific and Industrial Research Organization (CSIRO), Division of Soils in 1968-69. There he worked with Keith Norrish on the exchangeability of layer silicates. He was an invited speaker for the International Society of Soil Science in 1968 and the South Australia Soil Science Conference in 1969. Scott was an invited lecturer and participant with the North Atlantic Treaty Organization (NATO) Advanced Study Institute in Urbana, Illinois in 1979 and again in Bad Windsheim, West Germany in 1985. He traveled to laboratories around the world, including Louvain, Versailles, Rothamsted, and Aberdeen, to establish common research programs. Scott believed his department's reputation and stature were a result of coordination and interaction with other national and international laboratories. He encouraged faculty members now to continue those contacts.

Though Professor Scott was offered administrative positions at other universities, he was never very tempted to accept them because of dedication to his research and to his years of service at Iowa State. When he described the most memorable moments of his career, he liked to speak about the close relationships he had with his students and the progress and successes they have achieved with joint research ventures. These results are described in 62 authored or co-authored publications and more can be found in unpublished grant reports, abstracts, etc.

Scott found the most satisfaction in an area of research that dated back to his graduate work at Cornell on the development and use of ion-selective electrodes. He continued this at Iowa State and devoted some research time to this area until he retired. Some of his graduate students are still working on this subject. He spent most of his time studying potassium from the moment he came to Iowa State. Scott worked to get the necessary funding and provide needed organization for a research program to study potassium chemistry. As part of this research program, Scott used solutions of sodium tetraphenylboron, a compound that did not appear in chemistry literature as a potassium precipitant until 1953. He hopes that some of the research he has done will "stand up and be useful." Applied soil fertility specialists are exploring use of solutions of this compound as a soil extractant to determine available potassium in order to make fertilizer recommendations.

Not only participating in planning and executing a potassium research program, Scott also was deeply involved in planning and construction of the original Agronomy Building as well as an even larger addition later. From his 1950 arrival in the department until his retirement in 1990, he served as chairman of the Agronomy Building Committee. As the original Agronomy Building was constructed, Scott says he could expect a visit from either Dean Floyd Andre or W.H. Pierre, both upstairs in Curtiss Hall, every day of the week. He devoted much time to improving the laboratory plans for the building. As the major addition to the building was planned and constructed, he played critical roles working with architects and contractors. He was particularly diligent in working with the physical plant architects to build a constant temperature and humidity room to meet his requirements. At one point, he asked the architects to gut the room and rebuild it despite their protests that "there were no rooms like this anywhere in the United States." The constant temperature and humidity room is now up and working thanks mainly to Scott's perseverance!

Duncan Scott is survived by his wife Elizabeth; three children and four grandchildren. In Memoriam contributions can be made to the Alzheimer's Association.



## **Yoshiaki Ishizuka 1907-2005**

Dr. Prof. Emeritus Yoshiaki Ishizuka, Honorary Member of the International Union of Soil Sciences, passed away on 13 September, 2005 in Tokyo at the age of 98. We express our sincere mourning. Dr. Ishizuka was born in 1907 in Tokyo. He graduated from Department of Agricultural Chemistry, Faculty of Agriculture, Hokkaido University in 1927, then joined the Department as a research staff, and then became Professor of Soil and Fertilizer in 1945. Dr. Ishizuka made important contributions to Japanese Society of Soil Science and Manure as President from 1958 to 1960. He contributed also to the International Society of Soil Sciences as a Chairperson of Fourth Commission-Soil Fertility from 1960 to 1968 and was elected as an Honorary Member of the Society in 1978.

At the beginning of his career, Dr. Ishizuka studied the growth of wheat in relation to absorption and utilization of nutrient elements at different growth stages. Then he extended his studies to nutritio-physiological studies of rice plant together with his colleagues, and the results from the studies contributed greatly to the increase of rice productivity in Asia.

After retirement from Hokkaido University, he was appointed as Board of Trustees of International Rice Research Institute from 1964 to 1968, worked at Food and Fertilizer Technology Centre for the Asian and Pacific Region as Director (Jan.1973-April.1975) and a member of Technical Advisory Committee (1977-2000). He will always be remembered for his dynamism and excellence in the pursuit of scientific and technological advancement, as well as research and development management in agriculture. On behalf of Japanese Society of Soil Science and Plant Nutrition, I pray for the soul of Prof. Emeritus Yoshiaki Ishizuka.



Makoto Kimura  
President, Japanese Society of Soil Science and Plant Nutrition

## **Reports of Meetings**

### **Advances in Molecular Modelling – Perspectives for Soil Research, Austria**

This IUSS-symposium took place on 21<sup>st</sup> and 22<sup>nd</sup> of October 2005 at the University of Natural Resources and Applied Life Sciences in Vienna, Austria. The major aim of the symposium, organised by commission 2.2. Soil Chemistry, was the review of most recent advances of methods in computational chemistry and their possible application in soil research. The topics covered quantum mechanical, semi-empirical and empirical methods. The principal objective of this symposium was to bridge theoretical chemistry to soil chemistry. Nowadays, the enormous improvement in computer technology makes it possible to investigate molecular systems of increasing size, even with the so-called ab-initio methods, which are based on solving the Schrödinger equation. Such quantum mechanical calculations provide data sets independent from experimental results. Thus, quantum chemical findings can be used to explain experimental observations or to elucidate basic mechanisms on a molecular level. At present, interactions of organic molecules (e.g. pesticides) and inorganic species with mineral and organic interfaces in the soil matrix are the main focus of research. A major aim is to characterise the possible behaviour of emerging chemicals in the soil environment as basis for an early risk assessment.





Participants of the IUSS-symposium "Advances in Molecular Modeling – Perspectives for Soil Research" held at the University of Natural Resources and Applied Life Sciences (BOKU), Vienna, Austria.

The symposium was opened by the Chairman of Division 2 "Soil Properties and Processes" (Prof. Nicola Senesi, Univ. of Bari, Italy) and the President of the European Confederation of Soil Science Societies (Prof. W.E.H. Blum, BOKU, Vienna). The 40 participants came from Austria, Brazil, Canada, France, Germany, Italy, Switzerland, UK, and USA. The 20 presentations mainly focussed on the modelling of clay minerals and humic substances and the interaction of organic and inorganic species with soil interfaces. Further, general modelling approaches (especially in the field of empirical methods) and the calculation of vibrational spectra were presented. The invited speakers, James Kubicki (Pennsylvania State University), Marco C. Nascimento (Universidade Federal do Rio de Janeiro), Neal T. Skipper (University College London) and Brian Teppen (Michigan State University) gave an excellent overview of the presently available methods and their possible application. The intensive discussions several times touched the problem of temporal and spatial scales: how to bridge 11-15 orders of magnitudes between ab-initio calculations on the molecular basis and the real world of a field plot? However, it was elegantly shown in several papers that quantum chemistry can provide significant input to elucidate principle processes of interactions in the soil matrix. Selected results of the symposium will be published in a „thematic issue“ of the European Journal of Soil Science in 2006. Additional papers are welcome and should be handed to the guest editors until 15<sup>th</sup> of March 2006 (Dr. Daniel Tunega, Institut für Theoretische Chemie, Universität Wien, Währingerstraße 17, A-1090 Vienna, Austria, [daniel.tunega@univie.ac.at](mailto:daniel.tunega@univie.ac.at); please, visit the website of EJS: <http://www.blackwellpublishing.com/ejs>).

Nicola Senesi  
Bari, Chairman of IUSS Division 2  
Martin H. Gerzabek  
Vienna, Symposium Organizer and Co-Chairman, IUSS Commission 2.2,

### **Soil and Environmental Chemistry Workshop, USA**

The Annual Meeting of the AOAC INTERNATIONAL Pacific Northwest Section was held at the University of Puget Sound, Tacoma, WA, USA on June 23-24, 2005. The university is located in the charming residential neighborhood in historic North Tacoma. Its park-like campus, beautiful ivy-wrapped brick buildings, spacious lawns, and elegant fountains provide an ideal setting for such events. Total attendance at the meeting was 122. The theme of the meeting was *"What are our best defenses? Environmental and intentional contamination"*. The program included plenary presentations (from Canada, Spain, Turkey, and USA), workshops and training sessions. There were seven workshops: (1) Soil and Environmental Chemistry (Coordinator: Yash P. Kalra, Canadian Forest Service, Edmonton, AB, Canada), (2) Microbiology (Coordinator: Don H. Bark, US Food and Drug

Administration, Bothell, WA), (3) Quality Assurance Relating to the Chemistry Laboratory (Coordinators: Roy Araki, US EPA, Region 10, Seattle, WA and Cliff Kirchmer, Washington State Department of Ecology, Olympia, WA), (4) Seafood Chemistry and Marine and Freshwater Toxins Subgroups (Coordinator: James Hungerford, US Food and Drug Administration, Bothell, WA), (5) Enhancing ICP-MS Analysis through Training and Innovation (Coordinator: Marshall Pattee, North Creek Analytical, Beaverton, OR), (6) Pesticide Residues Chemistry (Coordinators: Virginia Palomo, Oregon Department of Agriculture, Portland, OR and Steve Reimer, US EPA, Port Orchard, WA), and (7) Trace Metals Speciation from Sampling to Analysis (Coordinators: Carl Hensman and Frank Colich, Frontier Geosciences, Seattle, WA).

The following papers were presented in the Soil and Environmental Chemistry Workshop: (1) Novel approaches to environmental HPLC analysis (Douglas Elliott, Restek Corporation, Bellefonte, PA), (2) Play it safe in the laboratory - A presentation on laboratory glassware safety (Dale Cushenbery, Kimble Glass, Federal Way, WA), (3) Ultra high throughput microwave assisted evaporations and concentrations (Michael Howe, CEM Corporation, Charlotte, NC), (4) A review of extraction methods for soil analysis (Yash P. Kalra and Basilio Brizuela-Amador Perez, Canadian Forest Service, Edmonton, AB), (5) Metrology in chemical measurements (Yash P. Kalra, Canadian Forest Service, Edmonton, AB), (6) Quality assurance and quality control in a good laboratory practice laboratory (Steve McGeehan, University of Idaho, Moscow, ID), and (7) pH maintenance (Beau Fessenden, Thermo Electron Corporation, Beverly, MA). The training sessions included (1) Calibration Verification Requirements for Clinical Laboratories (Lori Hudson, Washington State Department of Health, Spokane, WA), (2) The Emerging Dietary Supplement Industry - Implications for FDA, Academic, and Private Laboratories (James Neal-Kababick, Grants Pass, OR), (3) Control Charts in the Analytical Laboratory (Ed Paski, Analytical Innovations, North Vancouver, BC, Canada), (4) Overview of Microscopy (Mike G. McDowell, Washington State Department of Health Laboratory, Shoreline, WA), (5) Microbiology (Bryce Mansfield, Biomedical Research Institute, Seattle, WA, Purnendu Vasavada, Food Safety and Microbiology, University of Wisconsin, River Falls, WI, and Richard C. Stevens, Departments of Genome Sciences and Medicine, Division of Medical Genetics, University of Washington, Seattle, WA). Birgit Kriete (Orca Citizens' Alliance, Friday Harbor, WA), banquet speaker, gave an interesting presentation entitled "Killer whales - Are they eating us out of our ocean? - The real story". The following companies displayed their products at the Scientific Expo: Agilent, Barnstead & Kimble/ Kontes, Biotrace International, Buck Scientific, CEM, Cetac Technologies, Dionex, Exttech Ltd., Hitachi Hitech, MLS Technologies, Perkin-Elmer, Restek, Sigma-Aldrich, Teledyne Tekmar, TRS Scientific Glass, Varian, Westco, and Whatman.

The meeting offered an excellent opportunity to the participants to update their knowledge and interact with scientists working in their areas of interest. The members of the Planning Committee were Don H. Bark, Enrico Buenaventura, Sue Coffey, Mike Grant, Nancy Hill, Jerry Hirsch, Jim Hungerford, Yash P. Kalra, Peggy Knight, Fred Krick, Virginia Palomo, Ed Paski, Josephine Pompey, Steve Pope, and Steve Reimer. The 2005 Executive of the Section consisted of Carlos Abeyta, Jr. (Chair), Jinxin Hu (Chair-Elect), Yash P. Kalra (Past Chair), Josephine Pompey (Secretary), and Mike Grant and Fred Krick (Treasurers). The AOAC INTERNATIONAL is the Association of Official Analytical Communities. It is committed to being a proactive, worldwide provider and facilitator in the development, use and harmonization of validated analytical methods and laboratory quality assurance programs and services. It also serves as the primary resource for timely knowledge exchange, networking, and high-quality laboratory information for scientists. It was founded in 1884 as the Association of Official Agricultural Chemists. The name was changed to the Association of Official Analytical Chemists in 1965 and AOAC INTERNATIONAL in 1991. It has more than 3,700 members, one-third of them from outside the US. The AOAC INTERNATIONAL Sections program was initiated in 1981. The Sections are located around the world: Ten North American Sections (Central, Mid-Atlantic, Mid-Canada, Midwest, New York-New Jersey, Northeast, Pacific Northwest, Pacific Southwest, Southern, and Southern California) and six International Sections (China, Europe, Japan, Latin American and Caribbean, Low Lands, and Taiwan). The Pacific Northwest Section includes four states in USA (Alaska, Idaho, Oregon, and Washington)



and two provinces in Canada (Alberta and British Columbia). It has the distinction of having been the first Section formed. Additional information is available from the AOAC INTERNATIONAL, 481 North Frederick Avenue, Suite 500, Gaithersburg, MD 20877-2417, USA; Telephone (301) 924-7077; Fax (301) 924-7089; Internet: [www.aoac.org](http://www.aoac.org)

Yash P. Kalra  
Canadian Forest Service  
Edmonton, Alberta, Canada

### **14<sup>th</sup> Nitrogen Workshop, The Netherlands**

The 14<sup>th</sup> Nitrogen Workshop was held in Maastricht, the Netherlands, from 24 to 26 October 2005. The theme of the conference was "Nitrogen management in agrosystems in relation to the Water Framework Directive". The conference was organised by the business unit Agrosystems Research of Plant Research International at Wageningen University and Research Centre (Wageningen, the Netherlands) in cooperation with the Conference Office of the University of Maastricht (Maastricht, the Netherlands). More than 220 scientists from 28 different countries and six continents attended the conference. The scientific programme contained three plenary sessions with oral presentations by invited speakers and speakers selected from the abstracts submitted, a poster session, a simultaneous session with working groups on eight specific topics, and excursions to various sites. The themes of the plenary sessions were (i) Efficient nitrogen use from a regional perspective, (ii) Nitrogen management strategies at the farm level and (iii) Management of nitrogen processes at the field level. The proceedings of the conference will be published in 2006 in the form of a report of Plant Research International.

The 15<sup>th</sup> Nitrogen Workshop will be held in 2007 in Lleida (Spain).

Jacques Neeteson  
convenor of the 14<sup>th</sup> Nitrogen Workshop

### **3rd SUITMA Conference, Egypt**

After the first and second conferences (2000 and 2003) in Essen, Germany and Nancy, France, the third conference of the working group 'Soils of Urban, Industrial, Traffic, Mining and Military Areas-SUITMA/US' of IUSS was held in Cairo, Egypt from November 19 – 21. The 3<sup>rd</sup> SUITMA conference was organized by Prof. Salah Tahoun, University of El-Zagazig, in the Cairo House, and stood under honorary auspices of H.E.Prof.Dr.Amr Ezzat Salama, Minister of Higher Education and State of Scientific Research, H.E. Eng. Maged geotge., Minister of State for Environmental Affairs and H.E. Prof. Dr. Maher El-Domaty, President of the University of El-Zagazig. There were 45 oral and 72 poster presentations at the conference. The 130 participants came from 27 countries. The conference did attract many participants from Arabian and Asian countries beside European ones.

The conference focused on 8 thematic themes: more traditional ones as such properties of unconventional soils, methodology and classification, pollution and transfer risks, cycling of city refuse and soil forming substrates, and of new fields such as desertification, urban expansion, and sectoral competition on land, soils and quality of life in the city, rehabilitation of consumed mining and deserted military sites, soils of historical sites. There was much progress compared to the 1<sup>st</sup> and 2<sup>nd</sup> SUITMA conferences. Many ideas which started with the establishment of SUITMA now get contours and show that they start to work. The conference cited priorities in ancient and recent land use effects on soils and the problem of city extension. The thematic of effects of military actions on soils got much interest after it was presented first time at the 2<sup>nd</sup> SUITMA conference in Nancy by Prof. Morel. Remediation methods of intelligent use of materials of Technosols and of vegetation for pollution management were a big advance. Also dust, the importance of higher plants and fungi, soil mineralogy, pavement soils and soil buffer for heat got particular attention.

Methods concerned the peculiarities of organic matter in urban areas and soil evaluation. The conference showed that there should be much more attempt to adapt, improve and develop peculiar methods for soils and their problems of urban, industrial, traffic, mining and military areas.

The good facilities of Cairo House gave the conference the necessary frame for the great success of the conference. Of importance was also that in the city centre of Cairo good tourist hotels were made available which could be paid also by lower budgets. This did give many colleagues the chance to attend the conference.

The splendid gala dinner was on the Nile ship Alsaraya. Two 1 day tours to El-Fayoum area, and circle road of Great Cairo and eastern desert fringe of Cairo, and a 4 days tour to Siwa Oasis and Alexandria accomplished the SUITMA conference in Egypt.

Prof. Tahoun was strongly supported by many colleagues of El-Zagazig University, Suez Canal University, University of Cairo, Desert Research Centre, National Research Centre and the Egyptian Geological Survey and Mining Authority. To all, many thanks for this successful 3<sup>rd</sup> SUITMA conference.



Visit of the bentonite mines near oasis El-Fayoum by the participants of the 3<sup>rd</sup> SUITMA conference

The website of suitma 2005 is still active at [www.eun.eg/suitma](http://www.eun.eg/suitma) The proceedings of the conference are now being processed for publication in November 2006.

The next SUITMA conference will be 2007 in Nanjing, China, hosted by the Soil Science Institute of the Chinese Academy of Science, and will be organized by Prof. Gan-lin Zhang.

Wolfgang Burghardt  
Chair of Div. 3 - Soil Use and Management,  
and Chair of IUSS WG US/SUITMA.

### **Third International Conference on Plants and Environmental Pollution, India**

More than 400 delegates, representing various disciplines of biology and environmental sciences, from 35 countries participated in the Third International Conference on Plants and Environmental Pollution (ICPEP-3) held at the National Botanical Research Institute (NBRI), Lucknow, Uttar Pradesh, India, November 28-December 2, 2005. The conference was organized by NBRI and the International Society of Environmental Botanists (ISEB) and co-sponsored by several national and international organizations. In his inaugural speech, His Excellency Shri T. V. Rajeswar, Governor of Uttar Pradesh, expressed his profound concern on the problem of environmental pollution. Dr. P. Pushpangadan,



President ISEB and Director NBRI, welcomed the delegates and guests. Prof. S. V. Krupa, University of Minnesota, USA and Prof. J. N. B. Bell, Imperial College, London, U.K. were the guests of honor. A magnificent cultural program of music and dances was presented by the students of Bhatkhande Music University, Lucknow.



The scientific program included oral presentations (lead lectures and invited papers) in the following eight sessions: (1) Bioindication and bioremediation (2) Environment and biodiversity (3) Environmental education, mass awareness, and legislation (4) Environmental impact assessment (5) Environmental biotechnology (6) Contemporary environmental issues (7) Plant responses to environmental pollution and (8) Climate change, plant productivity, and food security. Presentation of posters was an integral component of the conference. More than one hundred papers were presented in the poster session. Dr. M.J. Sanz of Spain (Authors: M.J. Sanz and S. Krupa) and Ms. Sapna Awasthi of India (Authors: Nirmala Nautiyal and Sapna Awasthi) were awarded the first and second prizes for their posters. Three special lectures were delivered by Dr. P. Pushpangadan, Prof. Norman P.A. Huner, and Dr. H.M. Behl. Most of the technical sessions were held concurrently in two halls; the plenary and special lectures were presented in the auditorium.

A few companies and Public Sector Undertakings exhibited their latest products and services. They dealt with environmental and/or scientific equipment and chemicals. Some publishers displayed their various scientific books and journals. The conference dinner on November 30 at the Amrapali Entertainment City (Radhey Water Park) provided an excellent opportunity to spend some quality time with colleagues in a relaxed environment. The conferees found ICPEP-3 to be a great meeting to network and learn from their colleagues from around the world. It was nice to see active student participation in this very well-organized conference. I was impressed by the high caliber of papers presented. The conference provided a unique opportunity to interact. The staff at the registration desk was very knowledgeable and helpful. The Organizing Committee is to be complimented for the excellent scientific program. The conference was scientifically and socially successful. The unparalleled Indian hospitality made it a memorable event for all of us. Thanks to Mrs. Sunita Sachdev and her son Arpit for giving me an excellent tour of this historic city. My stay in the City of Nawab was a pleasant experience. I am grateful to Dr. R. D. Tripathi and Dr. Kamla Kulshreshtha, Organizing Secretaries, for inviting me to present a paper and giving me the opportunity to chair a session.

The NBRI (<http://www.nbri-lko.org/>) is a premier multi-disciplinary, state-of-art plant research national institute under the umbrella of the Council of Scientific and Industrial Research (CSIR), New Delhi. The ISEB (<http://www.geocities.com/isebindia/>), in



collaboration with NBRI, has been organizing International Conferences on Plants and Environmental Pollution. The first two conferences were held on November 26-30, 1996 and February 4-9, 2002. The Society was founded in Lucknow on December 3, 1994 (Dr. P.V. Sane, President). It is a non-profit, non-governmental organization. It has been actively engaged in promoting its objectives (research, education, and awareness on the role of plants in preserving our environment). It is a Scientific Member of the International Union of Biological Sciences (IUBS), Paris, France. Further information is available from Dr. K. J. Ahmad, Secretary, International Society of Environmental Botanists, National Botanical Research Institute, Rana Pratap Marg, Lucknow-226001, U.P., India;E-mail: [isebnbrilko@satyam.net.in](mailto:isebnbrilko@satyam.net.in).

Yash P. Kalra  
Canadian Forest Service  
Edmonton, Alberta, Canada

### **First Symposium on the Management of Tropical Sandy Soils for Sustainable Agriculture, Thailand**

Sandy soils are the dominant soil form over significant areas of tropical Africa, South America, Australia and Asia. Due to their intrinsic chemical and physical properties these soils are marginal with respect to sustained productivity without significant and continuous inputs. Scant attention has been paid to these soils with respect to management even though these sandy agroecosystems sustain the livelihoods of millions of farmers, some of which are amongst the poorest in the world. L'Institut de Recherche pour le Développement (IRD, France) and the Land Development Department (LDD, Thailand) have taken the initiative to organize an international Symposium to establish the state of the art with respect to the management of tropical sandy soils and to identify research gaps with respect to a holistic approach for the sustainable development of these soils in the tropics. This symposium was held under the auspices of the International Union of Soil Science Society (IUSS) with the support of the International Management Water Institute (IWMI), the Food and Agriculture Organization of the United Nations (FAO), Khon Kaen University (KKU, Thailand) and the French ministry of Foreign affairs. Over 200 Thai participants and more than 80 foreign participants from 23 different countries representing the five continents participated in the 4 day Symposium. Altogether, 61 oral presentations and 64 posters were presented. A mid-conference field trip allowed participants the opportunity to view the sandy soils and agroecosystems of Northeast Thailand, a region where 80 % of the 20 millions inhabitants are small-farm holders.

Presentations on the physical properties of these soils highlighted the large spatial and temporal variability in properties that often are a major constraint to root development or water infiltration. A common thread in all of the presentations confirmed the large differences in soil behavior associated with minor changes in soil characteristics. This situation cannot be explained only by high heterogeneity; it seems that quality of analysis (clay and organic matter quantity and quality, detailed analysis of bulk density) could be improved and that would lead to a better understanding of processes and factors of soil changes and finally to more accurate recommendation for sustainable management. Any innovation must integrate the limited potential of the tropical sandy soils and the socio-economic situation of the farmers. The Symposium attempted to present a holistic approach to addressing the issues associated with the management of these soils that included the socio-economic dimensions in their management. It is anticipated that the proceeding of the symposium will come out as a book (published within a year) which would be the first on that subject.

There was general agreement by participants that the symposium addressed a specific gap in our knowledge and that this should become a routine undertaken in the future. The web site of the symposium (<http://www.tropicalsandysoils.org/>) will be kept alive to become a clearing house of information on tropical sandy soils. The idea of creating a working group on tropical sandy soils within the IUSS was discussed. A second symposium will probably be organized in three years, in Africa.



*Talking about an EM38 in rice fields north of Khon Kaen*

### **Pedometrics Meeting 2005 in Naples, USA**

The Biannual Meeting of Commission 1.5 Pedometrics - the Pedometrics 2005 Meeting - took place in September 12-14, 2005 in Naples, Florida, USA. The keynote speakers Harold van Es, Professor in the Department of Crop and Soil Sciences at Cornell University, USA; Marc Van Meirvenne, Professor in the Dept. Soil Management and Soil Care, Faculty of Bioscience Engineering, Ghent University, Belgium; and Jay Bell, Professor in the Department of Soil, Water, and Climate at the University of Minnesota, USA gave talks on "Spatially-Balanced Experimental Designs for Field Experiments", "Pedometrics in Transition: From too few to too many Data?", and "Dynamic Soil Mapping: Adding the Temporal Dimension". All keynote talks stimulated discussion on critical topics related to pedometrics. A total of 36 oral and 16 poster papers were presented on topics as diverse as digital soil mapping, geostatistics, visible/near/mid-infrared diffuse reflectance spectroscopy, and soil and remote sensor applications. A complete list of paper abstracts is available at: <http://conference.ifas.ufl.edu/pedometrics/Abstract%20Book.pdf>. Novel quantitative methods and creative ideas to improve our understanding of soils and how they relate to environmental factors were presented. A pre-conference workshop on "Quantitative Visible and Near-Infrared Diffuse Reflectance Spectroscopy for Soil Characterization" was taught by David Brown (Montana State University, Bozeman) and Fred McClure (North Carolina State University, Raleigh, NC). The post-conference tour into the Greater Everglades was lead by Mark Clark, Soil and Water Science Department, University of Florida. Tour stops included the Fakahatchee Strand State Preserve, an airboat tour, and Shark Valley Everglades National Park. Besides mosquito, participants enjoyed the pleasant Florida September heat and sun.





Participants - Pedometrics 2005 meeting in Naples, Florida.

### **World Soil Information Anniversary Seminar, The Netherlands**

World Soil Information (formerly known as ISRIC) is 40 years old. An Anniversary Seminar was held in Wageningen on the 9<sup>th</sup> March to celebrate past achievements and look to the future. Hosted by the Chairman of the Board, Stein Bie, and the Director, David Dent, and organised by Alfred Hartemink, the seminar was attended by 100 participants from all continents, at least ten of whom had already made their names in soil science at the time of its foundation. At a reception held in the World Soil Museum, three distinguished soil scientists were made Fellows of World Soil Information. These were Luca Montanarella (Italy), Pedro Sanchez (USA), and Johan Bouma (Netherlands).



*Prof. Pedro Sanchez talking on the Millennium development goals and soil fertility*

Six presentations set the scene. *Pedro Sanchez* (USA) outlined a project for achievement of the Millennium goals in Africa, based on key investments in target villages, with an emphasis on soil fertility. *David Dent* outlined global soil issues and the role of World Soil Information. Two inescapables over the next 40 years were population growth and land use change. Food production per capita and cereal harvested area had fallen below their peaks in the 1980s, and 40% of world population could not now be fed without synthetic nitrogen. *Carlos Cerri* (Brazil) reviewed a hot topic in more than one sense, soil organic



carbon stocks and carbon sequestration. Some 20% of the increase in radiation-forcing greenhouse gases was due to land use change. *Tom Veldkamp* (Netherlands) reviewed global land change: deforestation, increase in cropland, and expansion of cities. Humans respond not simply to change but to perceived change. Pressures on the environment, if strong, can lead via the 'ball-in-cup' concept to soil-landscape changes from one stable state to another. *Nuhu Hatibu* (Kenya) reviewed attempts to improve soil health in semi-arid areas of Africa. Often, the limiting factor to crop yields is not water but nutrients. The final presentation by *Hans Hurni* (Switzerland) asked, "Why do we do so little?" Why, for example, have international environmental conventions and the Millennium Ecosystem Assessment paid so little attention to soils?

This led up to the important concluding section, an agenda for action. The Chairman, *Don Sparks* (USA) pointed to a major failure in communication, of scientists to policy-makers. "Policy-makers don't read books, they don't listen to scientists; they listen to voters." So how can World Soils Information improve on this? As a communicating concept, 'soil quality' had failed. Some suggested 'soil health' might be more successful, others expressed doubts. One suggestion is that institutions, policy-makers and the general public (voters) are rightly concerned about hunger and famine. They respond to the image of a starving child. So why not present soil science in these terms; "So you want to avoid famine? That's our business, call on us!"

On future activities, the shortly-forthcoming review of land degradation, based on comparison of satellite imagery over the past ten years, was welcomed. Soil fertility and productivity, and the respective roles of organic methods and fertilizers, would remain a central questions. Soils and human health was receiving greater attention, as was conservation agriculture or land husbandry. In-house discussions following the meeting built upon the ideas mooted at this seminar. We, members of the international soil science community, trust and expect that World Soil Information will make even more productive contributions over the next 40 years!

Anthony Young (UK)

E-mail: [anthony.young@land-resources.com](mailto:anthony.young@land-resources.com)

### **30<sup>th</sup> annual conference of the soil science society of Nigeria, Nigeria**

The Soil Science Society of Nigeria (SSSN) held her 30<sup>th</sup> Annual Conference from December 5<sup>th</sup> to 9<sup>th</sup>, 2005 at the University of Agriculture, Makurdi, Nigeria. The Theme was "Management of Fadama soils for Environmental Quality, Food Security and Poverty Alleviation in Nigeria". The Conference was attended by over 120 Scientists, farmers and agricultural policy makers from states and Federal Government agencies, International Organizations, State Agricultural Development Programmes (ADPs), Fertilizer Companies and other stake holders in agriculture and environment. About 81 Scientific papers were presented. The distribution of the papers was: Soil Survey, Classification and Land use 20%, Soil Chem/fertility 54%, Soil Microbiology 4%, and Soil Physics 22%. After the technical sessions, there was the annual general meeting and on the last day a guided field tour was undertaken by the Scientists to assess the land use potentials of typical Fadama soils around Makurdi. At the Annual General Meeting (AGM), the Society made the following observations:

1. The Soil Science Society of Nigeria (SSSN) recognizes and appreciates the programmes, initiatives and policies of Federal and State Governments in promoting sustainable agriculture. The society also commends the effort of Government in diversifying our economic base from mono product oil economy thus making agriculture cardinal in the ongoing economic reforms with the ultimate goal of providing the enabling environment for a private sector led agricultural industry.
2. The SSSN is delighted to note that Government's Millennium Development Goals include the management of soil resources and environment for Food Security and Poverty Alleviation.

3. The Society observes that gradual conversion of most Fadama Soils, which are unique agricultural lands to non-agricultural uses such as building of housing estates in the urban and peri-urban areas.
4. The Society also observes this indiscriminate discharge of industrial effluent into the Fadama areas with the attendant environmental hazards and loss of highly productive lands.
5. The Society observes the indiscriminate use of fertilizers for crop production without recourse to soil testing and proper recommendations, thus resulting in accelerated land degradation and sub-optimal crop yields.
6. The Society notes the limited information on the Fadama Soils in Nigeria with respect to extent of coverage, properties and management options.
7. The Society also notes with great concern the unabated and widespread importation of blending and marketing of adulterated and low grade fertilizers and agro-chemicals. This has resulted in great losses to the farmers as well as leading to soil and environmental pollutions.
8. The Society observes the dwindling enrolment of students into soil science programmes in the tertiary institutions due to lack of job opportunities in their specialized areas on graduation.

Based on the above observations, the following Resolutions were reached at the AGM:

1. Soil testing programme should form the basis for sustainable production of all crops especially those under the Presidential Initiatives. Government are therefore called upon to urgently establish a well equipped and functional National Soil Research Institute, rehabilitate existing soil laboratories in Research Institutes, Federal and State Universities and Department of Agricultural Land Resources, to provide these services to farmers and other land users in all agro-ecological zones of the country.
2. Government should fund the mapping and characterization of Fadama soils
3. Nigerian soils should be surveyed at semi-detailed levels beyond existing reconnaissance survey while encouraging large scale farmers to conduct detailed soils survey of their farms.
4. Government should as a matter of urgency enact laws to regulate fertilizer and other agro-chemical s quality and useage in Nigeria.
5. Government should as a matter of priority enact a land use policy for Nigeria.
6. The three tiers of Government should provide special financial assistance to students wishing to study soil science to provide the needed manpower to manage the very fragile non-renewable soil resources of Nigeria.

### **Election of Officers**

At the Annual General Meeting the following Officers were elected to run the affairs of the Society for the next 2 years:

President	Prof V. O. Chude,	<a href="mailto:vchude@yahoo.co.uk">vchude@yahoo.co.uk</a>
Vice President	Prof O. O. Agbede,	<a href="mailto:agbeolu@yahoo.com">agbeolu@yahoo.com</a>
General Secretary	Dr A. E. Isenmila	<a href="mailto:ehisenmila@yahoo.com">ehisenmila@yahoo.com</a>
Assistant Secretary	Dr A. O. Ano	<a href="mailto:tonyanoh@yahoo.com">tonyanoh@yahoo.com</a>
Treasurer	Dr B A Raji	<a href="mailto:rajibash@yahoo.com">rajibash@yahoo.com</a>
Editor-in-Chief	Prof S O Ojeniyi	
Ex-Officio Members	Dr U Omoti, Prof N O Isirimah, Prof A. A. Agboola	

### **XVI Latinamerican Congress and XII Columbia Congress of Soil Science**

The meeting of the XV1 Latin American Congress of Soil Science was held in the city of Cartagena from 26th September to 1st October 2004. There were in the region of 600 delegates from 61 countries. The Secretary General of IUSS Professor Stephen Nortcliff was present and assisted with aspects of the discussions at the Congress. More than 400 studies were presented in the five commissions and 25 symposia at the Congress. It was agreed that the next Latin-American Congress will be held in the City of León, Guanajuato, México under the presidency pf Dra. Edna Alvarez in 2007. The Soil Science Society of Colombia celebrated the 50th anniversary of its foundation with a meeting in Medellín with





the former presidents and some 300 participants, this past 23rd of September. The new President is Dr. Dimas Malagón. The coming year the XIII Congress of the Colombian Soil Science Society will be held in Bogotá. Details: [scsuelo@cablenet.co](mailto:scsuelo@cablenet.co) - <http://scsuelo.tripod.com>

#### **IV International Conference on Cryopedology, Russia**

The Cryosol Working Group of the IUSS and IPA held the IV International Conference on Cryopedology from August 1-8 in Arkhangelsk and Pinega, Russia. The focus of the meeting was Cryosols: Genesis, Ecology and Management... The meeting was hosted by the Institute of Ecological Problems of the North Ural Branch of RAS, Arkhangelsk. The lead organizer of the conference was Institute of Geography, Russian Academy of Sciences, Moscow and Cryosol WG Co-Chair Dr. S.V. Goryachkin and he was assisted by the Co Chair of the WG Prof Dr. E. M. Pfeiffer. There were several groups active in the organization and sponsoring of the conference - Cryosol Working group of IUSS and IPA; Commission of Paleopedology of IUSS and INQUA; Dokuchaev Soil Science Society,;; Institute of Physico-Chemical and Biological Problems of Soil Science, Pushchino; State Reserve Pinezhsky, Arkhangelsk Region; Russian Foundation of Academy Research; Presidium of Russian Academy of Sciences; German Research Community; and The University of Hamburg, Germany. All of these groups are thanked for their efforts.

Over 60 participants attended the meeting from eight different countries representing many different areas of soil science but all with an active interest in Cryopedology. The first 4 days in Arkhangelsk were formal sessions where 40 papers were presented as well as 15 posters dealing with all aspects of Cryosols. There was a very active discussion of the different papers and recommendations were made by the group for changes to how Cryosols are handled in the WRB.

Three days were then spent on a very interesting field trip to the Pinega Region. The field trip focused on "Soils and Perennial Underground Ice of Glaciated and Karst Landscapes in Northern European Russia". This was an area of Gypsum Karst with many different kinds of soils. Several Profiles were visited and their genesis and classification were discussed by the group. How the soils were classified in different classification and mapping systems were discussed and compared.

The Pinega State Reserve was visited and information was presented on the region as well as a very interesting Museum of Karst was visited.

The Cryosol WG was formed in Pushchino in December of 1992 and of note at this meeting was the large number of "young scientists" who took part in the discussions and made several very interesting presentations. This was very significant to many of the older founders of the Cryosol Working Group as we know the work and interest in Cryosols will continue into the future. Regions with permafrost are the areas predicted to have the most drastic effects of global climate change and as these areas are used for more mineral extraction, and visited by more and more people more and more ecological problems will develop and need to be addressed.

All of us who attended were very impressed by the organizational work done by our Russian colleagues. All of the logistical arrangements were excellent and the meeting ran very smoothly at all times. The field trip was super with many soil profiles to discuss with a very informative and detailed tour guide. Meeting was very scientific and every one had a good time and all left with a very good impression of the organizational ability of the local hosts.

Detailed information on the conference can be found at the WWW site of the Cryosol Working Group <http://igras.geonet.ru/cwg/>

## Upcoming Meetings

For details on the Upcoming Meetings see: [www.iuss.org](http://www.iuss.org)

### 2006

14th ISCO Conference 14-19 May **Morocco**  
4th Latino-American congress environ. physics & chemistry 22-26 May **Spain**  
Long term studies in ecology 22-24 May **UK**  
Regional Geological Cartography and Information Systems 13-15 June **Spain**  
International symposium on deteriorated volcanic soils 1-8 July **Mexico**  
2nd Global workshop on digital soil mapping 4-7 July **Brazil**  
2006 Spatial accuracy 5-7 July **Portugal**  
18th World Congress of Soil Science 9-15 July **USA**  
8th International conference precision agriculture 23-26 July **USA**  
100 years of soil science in Romania 20-26 August **Romania**  
1st European Congress of Conservation Biology 22-26 August **Hungary**  
17th ISTRO Conference 28 August-3 September **Germany**  
Soil and water conservation under changing land use 12-15 September **Spain**  
Workshop on modelling of pedogenesis 2-4 October **France**  
Lysimeters for Global Change Research 4-6 October **Germany**  
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**

### 2007

5th Int Congress of the European Society for Soil Cons. 25-30 June **Italy**  
Enzymes in the environment 15-19 July **Italy**  
ASA-CSSA-SSSA International annual meeting 4-8 Nov **USA**

### 2008

International congress of irrigation and drainage **Pakistan**  
EUROSOIL Congress 23-31 Aug **Austria**  
ASA-CSSA-SSSA International annual meeting 26-30 Oct **USA**

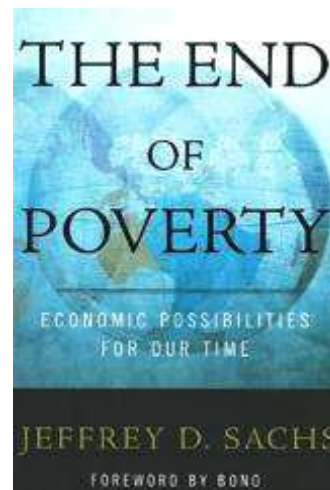
## New Publications<sup>1</sup>

**The end of poverty – economic possibilities for our time**, by Jeffrey D. Sachs. Penguin Press, New York, 2005. Hardbound, 396 pp. US\$27.95. ISBN 1-59420-045-9.<sup>2</sup>  
Prof. Jeffrey Sachs is Director of the Earth Institute at Columbia University and keynote speaker at the 18<sup>th</sup> World Congress of Soil Science 9-15<sup>th</sup> July in Philadelphia. He has written a fascinating book about the poverty and this book should be read by soil scientists fascinated by big questions, global issues and readable books. Throughout the book there are many views on the role of the US in global politics and poverty alleviation. The book title refers John Maynard Keynes' from 1930 "Economic possibilities for our grandchildren". But Sachs has less patience – not for the grandchildren but in our time, that is: by 2025. And these he considers the economic possibilities for our time: to meet the Millennium Development Goals (MDGs) by 2015; to end extreme poverty by 2025; and to ensure that poor countries have stepped on the ladder of development by 2025. Sachs

<sup>1</sup> The New Publication section is prepared by Hans van Baren ([hans.vanbaren@wur.nl](mailto: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.

<sup>2</sup> This an extended version of a review that will appear in a forthcoming issue of *Geoderma*

is the head of the MDG Project of the UN. The eight MDGs were unanimously agreed to in 2002 by all 191 UN member states. These goals are important targets for cutting poverty in half by the year 2015, compared with a baseline of 1990. Sachs is convinced: they are bold but achievable.



*The man and his book*

The book is divided in three parts: introductory chapters on poverty, case studies of countries in which Sachs was involved, and synthesis pointing the way ahead to end poverty. Only one sixth of the global population has a high-income status through consistent economic growth; another two-third has middle-income status with moderate rates of economic growth; and one sixth of all people are stuck in extreme poverty with very low rates of economic growth. Sachs gives an overview of where the poverty occurs (mostly in Africa) and linking it to various factors; for example, crop yields are related to growth of Gross Domestic Product (GDP) per capita. What comes first: economic growth or high yields? But obviously high yields mean high inputs and that can only be done when money is earned and the economy is right. Successes include China where 64% of the population lived on an income below one dollar per day in 1981 but the number was reduced to 17% by 2001. By the year 2050, it is reasonable to suppose that China will reach around half of the Western Europe income average - that is how quickly it can go. For India, he shows how it changed from an impoverished country 25 years ago to high-tech information service country in the world economy in the 1990s. That is why poor countries should not despair, it can be done.

In the second section, Sachs describes his experiences as advisor to various national governments including Bolivia, Poland, Russia, China, India and Africa, mainly Kenya. He describes his approach in which he views countries with huge economic problems, like super inflation, as patients. He sees countries as individuals in trouble who need the help of their families, friends, counsellors and public programs. He has developed a clinical approach to cure the problem and his clinical economics are roughly as follows: countries are poor because they are in debt, are politically instable and have unfavourable environmental and socio-economic conditions. As a result, there is no economic development and they cannot get the first foothold on the ladder. With some help (debt cancellation and financial injections) they get the first foothold and the development may continue. Without that kick-start, development may not start at all. The end of extreme poverty is the beginning of economic progress. It is not quite as simple as that and Sachs shows in various examples that happenings and measures in one place cannot be viewed independently of what happens elsewhere on the globe. Just as in ecology it seems that the holistic view has arrived in economics.

In the latter chapters, examples are given of how poverty can be ended including the already infamous Millennium villages like Sauri in Western Kenya. Sachs demonstrates that five interventions are needed to lift the village out of poverty: 1. Agricultural inputs (e.g.

inorganic fertilisers), 2. Investment in health, 3. Investment in education, 4. Power, transport and communication, 5. Safe drinking water and sanitation. Total costs would be about \$70 per person per year and Kenya would require an annual investment in the order of \$1500 million per year to provide all poor villagers with a similar package. Current donor support for Kenya is \$100 million. Upscaling from villages to entire countries or continents seems to be easier in economics than in soil science where the problem is largely unsolved.

Sachs singles out myths and questions common reasoning in the development circuits. For example, he disposes of the idea that the rich have got richer because the poor have got poorer - it would only be plausible if gross world production had remained roughly constant but gross world production raised nearly fifty fold in the past two centuries. Sachs also reminds us that until the mid-1700s the world was very poor by any of today's standards; in many regions in Western Europe and North America poverty was fairly common until the Second World War. Those that climbed out of poverty have thus a moral responsibility to help those that are still in it.

He also questions why some countries are poor (cultural, geography, governance etc.) and in the book there are various critical notes on donor behaviour. Not only critical - also quantitative. Aid per person in sub-Saharan Africa fell from \$32 in 1980 to \$22 in 2001, and Africa was poorer at the start of the 21<sup>st</sup> century than during the late 1960s when the IMF and World Bank first arrived in Africa. Often aid packages have not been delivered or as he notes: an endless stream of misleading announcements that come from rich countries vis-à-vis poor countries. Rich countries should give grants rather than loans - just as was done under the Marshall Plan.

Politics play a role in this book and Sachs is a firm believer that politics cannot explain Africa's prolonged crisis. Relatively well-governed countries such as Ghana and Senegal fail to prosper and it turns out that Africa's per capita economic growth is significantly lower than in other developing countries with comparable levels of corruption and income. Sachs comes up with an array of explanations and an important one is the lack of sufficient aid: The biggest problem today is not that too many poorly governed countries get too much help but that well-governed countries get far too little. But not only aid, also trade, although trade reforms alone are not powerful enough to enable the poorest countries to escape from extreme poverty.

In various sections, Sachs refers to soil management and particular soil fertility and nutrient management. For example, he refers to the poor inherent soil conditions in African countries: "...soils have been long depleted of nutrients as the result of repeated harvests without the benefit of chemical or organic nutrient inputs." He also suggests how these adverse conditions could be improved: nitrogen-fixing trees, agroforestry and inorganic fertilizers. As a means to let household income grow, he mentions that technology can play a role: "...an agricultural extension officer teaches the farm household how to manage the soil nutrients in a new and improved manner by planting special nitrogen-fixing trees that replenish the vital nitrogen nutrients of the soil...". He also mentions that new agroforestry techniques can triple food crops in the N-depleted soils of Africa. As we know, N-fixing trees are beneficial but cannot do the full job of soil fertility restoration, apart from problems with adaptation of planting trees by farmers. Inorganic fertilisers remain indispensable, as Sachs notes, and he favours fertiliser subsidies like the farmers in Western Europe receive.

Sachs, like Jared Diamond, is fascinated by the influence of environmental conditions on a nation's wealth. Some countries are landlocked, very mountainous and have poor inherent conditions that hinder economic development. Nonetheless, he states that "...it is time to banish the bogeyman of geographical determinism". That is somewhat contradictory to his view elsewhere in the book (page 208 "...geography have conspired with economics to give Africa a particularly weak hand....the combination of Africa's adverse geography and its extreme poverty cause creates the worst poverty trap in the world"; or on page 312: "...slower growth [in Africa] is best explained by geographical and ecological factors"). Areas where soils are inherently poor are areas where people are poor. But poor soils and people have always existed, also in Western Europe and the USA. Hundreds of years of inorganic and organic inputs and other soil improvements (liming, drainage etc.) have made many poor soils highly productive and the people rich. So the inherently poor soils



can be made rich but it needs inputs, and the will to make those inputs. It is unfortunate that there are influential people in rich countries who think that inorganic fertilisers are pesticides, and that organic agriculture can feed the world. It can not, and it is pleasing to read that Sachs has no chemophobia – in fact he suggests that the use of DDT, where appropriate, can help to reduce the burden of malaria in Africa (page 262).

All in all, it is a bit unusual to read about soils and economic development in economic works. It shows that Sachs has an open eye for an important cause of low agricultural productivity in many poor countries. He provides no spatial or quantitative link between poor soil conditions and poverty (do we have the data?) but his point is well-made. It can only be hoped that his plea for the provision of free or cheap anti-malarial measures and Aids medicines go hand-in-hand with necessary investments in soil nutrient capitals – an idea that has fruitlessly floated around in Africa for more than 10 years.

As a soil scientist, I enjoyed reading this book, I even think that I understood most of it. Here is a man who can write and has a message. The message is that poverty can end in our time – that is not a forecast, nor a prediction, it is merely an explanation of what is possible. Throughout the book Sachs refers to soils wherever appropriate and that in combination with the historical links and insights makes this book worth reading for many soil scientists. You may also pick up a few ideas of where to focus your next research project or pick and choose convincing arguments to slot into your grant proposal. The world is better off if the Millennium Goals are being met, and if soil science plays the role it deserves.

Sachs thinks bottom-up: he believes that poverty can be reduced by helping the rural poor; give them inputs, health, education, safe water and a good road for transportation to buy and sell goods and economic development may start. True as it may be, in some countries rural poverty was reduced because money was flowing in from family members working in the cities (off-farm income). That is, and has always been, a way of integrating people in the cash economy and getting the first foot on the ladder of economic development. Sachs advocates good science and the upscaling of successes. That is refreshing to read – it has worked in most parts of the world so why not use it in the extreme poor areas. But many development agencies and donors somehow think that science has no role to play.

I don't know enough of macro economics to tell whether Sachs' ideas and experiences (lifting debt, good governance, financial injections, liberalising markets, etc.) are as glorious and celebrated as described in this book. But I have seen enough poverty rooted in poor environmental conditions to understand that the plea of Sachs for ending poverty is extremely necessary. In a world preoccupied with terror, security and Wall Street and Nikkei indices, compassion and help for the poor is not only noble and humane but also sensible. We can only hope that a soil scientist would be able to write a similar book, as readable, passionate and persuasive as Sachs' book. Something like: *The end of poor soils and their management – ecological possibilities in our time*.

The book is amply illustrated with graphs and maps, which I guess is fancied by most soil scientists with a spatial and quantitative mind. The foreword is by Bono – the singer of U2, an Irish rock band. Bono is the man behind the gigantic pop music spectacle Live8 that was held in the summer of 2005. More importantly, he is one of the most dyed-in-the-wool advocates of Sachs' ideas. They travel jointly through Africa, share the same ideas but they target a different audience. Obviously Sachs is highly influential in the policy arena whereas Bono appears to be the mobilizer and inspirator for many (young) people throughout the world. That might be a successful combination and it can only be hoped that political changes will follow public opinion – as they mostly do. To some extent people listen to politicians, but increasingly politicians have started to listen to the people they serve.





*Brother in arms: Bono and his professor*

At last something about the author. There are some biographic elements and we find out a little about the man Jeffrey Sachs, which increases the readability of the book. We learn how he changed his views over time, how perseverance and persistence pay and how he observes the smoking habits and full ash-trays of a Polish finance minister. Sachs was professor at Harvard before becoming the head of the MDG projects. Sachs has his critics. With this book he aims to convince them of the possibilities to end poverty. I cannot help thinking of various gloom and doom books (Club of Rome, Paul Ehrlich, Lester Brown etc.) that have predicted Malthusian catastrophes which have proved wrong, so far. The state of the world and its progress is a difficult thing to influence, but without hope and high aims to influence and change its future course we might as well do nothing and simply enjoy. Time will tell; let's influence time. Sachs gives important leads and follows Thomas Malthus' code of belief: *Evil exists not to create despair but activity.*

Alfred E. Hartemink  
 ISRIC – World Soil Information  
 e-mail: [alfred.hartemink@wur.nl](mailto:alfred.hartemink@wur.nl)

**Slash-and-Burn Agriculture. The search for alternatives.** C.A. Palm, S.A. Vosti, P.A. Sanchez and P.J. Ericksen, editors. Columbia University Press, New York, 2005, xxiv + 463 p. ISBN 0-231-13451-7, softcover; 0-231-13450-9, hardcover.

This book is a synthesis of the first decade of the work of the Alternatives to Slash-and-Burn (ASB) initiative. Every year about 130.000 km<sup>2</sup> of humid tropical rain forest is destroyed. Caused in part by the slash-and-burn practices of both large- and small-scale farmers the environmental implications of tropical deforestation and its threat to biodiversity and carbon emissions remain a worldwide concern. Yet, the small-scale farmers who use slash-and-burn agriculture depend on it to produce food and make a living for their families. Balancing the legitimate interests of rural households and global concerns about tropical deforestation is one of the major challenges of the coming decade. The ASB consortium was formed in 1992 by a group of concerned national and international research institutions to address the global and local issues associated with this form of agriculture. With contributions from agronomists, foresters, economists,



ecologists and anthropologists, this book synthesises the first decade of ASB's work. The first paper provides the introduction to slash-and-burn activities and the overall framework used by ASB. The second section focuses on the different environmental, agronomic and socioeconomic dimensions, including chapters on carbon dynamics, greenhouse gas emissions, aboveground and belowground biodiversity, agronomic sustainability and macroeconomics. The third section focuses on specific alternatives for slash-and-burn, including community forest management, rubber agroforests, shade coffee, and reclamation of degraded grasslands. The fourth section provides the perspective of the main countries involved: Brazil, Indonesia, Cameroon, Peru and Thailand. The final section compares the different sites and assesses the tradeoffs among the environmental, agronomic, and economic functions of the forest and alternatives to slash-and-burn systems.

Price: USD 39.50, softcover; USD 79.50 hardcover.

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**Sustainable Use and Management of Soils - Arid and Semiarid Regions** - Advances in Geocology 36. A. Faz Cano, R. Ortiz Silla and A.R. Mermut, editors. Catena Verlag, Reiskirchen, 2005, 602 p. ISBN 3-923381-49-2; US ISBN 1-59326-244-2. Hardcover.

This book contains a wide range of papers presented at the Symposium on Sustainable Land Use and Management of Soils in Arid and Semiarid Regions, held in Cartagena, Spain, in September 2002 and attended by more than 250 scientists. It was part of the activities of Division 1, Soils in Space and Time, of the IUSS. Drylands are in the high-risk areas. Erratic rainfall, land degradation, inadequate technologies used, and inappropriate inputs result in unpredictable crop production. The objective of the workshop was to widen our understanding of the nature and dynamics of vegetation growth and resilience and encourage the practice of sustainable management in the susceptible drylands. This book provides very useful up-to-date information for researchers, educators, graduate students, policymakers and those interested and concerned in the many issues related to land degradation and sustainable use of soils in the vast arid and semi-arid regions throughout the world.

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**Nutrient Management in Sustainable Agricultural Systems.** Soil Use and Management, volume 21, March 2005, Supplement, pp. 75-166. L. Bergström and S. Dahlin, guest editors. CABI Publishing. ISSN 0266-0032.

Effective management of plant nutrients is one of the most important factors regulating crop yields and environmental problems caused by agricultural activities. In temperate regions of the world, such as central and northern Europe and large parts of North America, this has resulted in ambitious efforts to develop practices that improve efficiency of nutrient use. This has been one of the focal points within the multidisciplinary Swedish research programme FOOD21, in which scientists have analysed sustainability issues of the agricultural food chain. Research related to N, P, K and trace elements was carried out within the programme for eight years. Because far less was done to make a holistic analysis of the interactions among the different plant nutrients and how this affects management practices, and a project aimed at compiling state-of-the-art knowledge on nutrient management in sustainable agricultural systems was initiated. It was the aim to produce a publication with information on: (1) key processes in nutrient cycling and how they are affected by soil, climate, management practices, and spatial and temporal variability in the landscape; (2) measures for improving the efficiency of use of individual

nutrients; and (3) the options for, and feasibility of, improving the efficiency of nutrient use in specific agricultural systems. Different systems were selected: low input meat production based on grazing; mixed farming combining meat and milk production and arable crops; exclusively arable cropping; and concentrated indoor animal production. In addition, scaling issues related to nutrient losses, and recycling of nutrients in municipal waste were identified as important topics. The results of these efforts are contained in this supplement.

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**Characterization of Contaminated Land.** Soil Use and Management, volume 21, December 2005, Supplement, pp 439 – 540. S. Young and P. Nathanail, guest editors, B. Davies, editor. CABI Publishing. ISSN 0266-0032.

The need for improved characterization of contaminated land has never been greater. This is partly due to the requirements of urban development and partly to more widespread concerns over human health and demands for improved environmental stewardship. The speed of development in all areas of chemical and biological research related to risk from contaminants has greatly increased. This supplement reviews the current state of characterization of contaminated land and soils. It is presented in three parts which loosely follow the sequence of operations required to characterize soil, viz. sampling, analysis, and (risk) assessment, with respect to the major classes of potentially toxic contaminants: metals and metalloids, radio nuclides and organic contaminants.

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**New Vistas in Agroforestry. A Compendium for the 1<sup>st</sup> World Congress of Agroforestry**, 2004. Advances in Agroforestry 1, P.K.R. Nair, M.R. Rao and L.E. Buck, editors. Kluwer Academic Publishers, Dordrecht, 2004, 480 p. ISBN 1-4020-2501-7. Hardcover.

Agroforestry, the purposeful growing of trees and crops in interacting combinations, began to attain prominence in the late 1970s, when the international scientific community embraced its potentials in the tropics and recognized it as a practice in search of science. During the 1990s, the relevance of agroforestry for solving problems related to deterioration of family farms, increased soil erosion, surface and groundwater pollution, and decreased biodiversity, was recognized in the industrial nations too. Thus, agroforestry is now receiving increased attention as a sustainable land-management option the world over because of its ecological, economic, and social attributes. Consequently, the knowledge-base is being expanded at a rapid rate as illustrated by the growing number and quality of publications of various forms on different aspects of agroforestry. The aim of this new book series is to offer state-of-the-art synthesis of research results and evaluations relating to different aspects of agroforestry. The scope is broad enough to encompass any and all aspects of agroforestry research and development. This first volume in the series is a collection of 31 chapters on different aspects of agroforestry, produced as a compendium on the occasion of the 1<sup>st</sup> World Congress of Agroforestry, held in 2004. Its contents include a tropical-temperate mix of topics, which is a rare feature of a publication of this nature. Several of the chapters are on topics that have not been discussed or described much in agroforestry literature. A third feature is that some of the authors, though well known in their own disciplinary areas, are somewhat new to agroforestry; the perceptions and outlooks of these scholars who are relatively uninfluenced by the past happenings in agroforestry give a whole new dimension to agroforestry and broadens the scope of the subject. Finally, rather than just reviewing and summarizing past work, most chapters take the extra effort in attempting to outline the next steps. Agroforestry stands to gain enormously from the infusion of these new and different ideas and bold initiatives, thus making the title New Vistas quite justifiable.



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**Handbook of Microbial Biofertilizers.** M.K. Rai, editor. Food Products Press, an imprint of The Haworth Press, New York, London, 2006, xxv + 579 p. ISBN 1-56022-270-0, softcover; 1-56022-269-9 hardcover.

This handbook provides in-depth coverage of all major microbial biofertilizers (Rhizobia, Arbuscular Mycorrhizal fungi and Cyanobacteria), as well as new and emerging growth promoters (endophytes). It examines the role of microbes in growth promotion, bioprotectors, and bioremediators, and presents protocols and practical strategies for using microbes in sustainable agriculture. Many charts, tables and figures make complex information easy to access and understand. Important issues surrounding microbial biofertilizers are discussed and it is shown that these environment-friendly bioprotectors, growth boosters and remediators are essential for soil and plant health.

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**Soil Abiotic and Biotic Interactions and the Impact on the Ecosystem and Human Welfare.** P.M. Huang, A. Violante, J.-M. Bollag and P. Vityakon, editors. Science Publishers, Enfield and Plymouth, 2005, xviii + 439 p. ISBN 1-57808-344-3. Hardcover.

Physical, chemical and biological processes are not independent, but rather interactive processes in soil environments. Therefore, a new Commission has been created in the scientific structure of the International Union of Soil Sciences (IUSS) to deal with physical/chemical/biological interfacial interactions, i.e., abiotic and biotic interfacial interactions in the soil and related environments. These fundamental interactive processes have an enormous impact on ecosystem productivity, services and integrity, and on human welfare. The book is divided in five parts. Part I overviews the subject and addresses abiotic and biotic interactions and the impact on restoration of terrestrial ecosystems and human welfare. Parts II, III and IV deal with the roles of abiotic and biotic interactions in the transformations of (a) natural organics and xenobiotics; (b) nitrogen, phosphorous, sulphur and boron; and (c) metals and metalloids, respectively. Part V addresses the issue of rhizosphere processes, the bottleneck for sustaining biological productivity and protecting the human food chain. The book is an important reference for chemists and biologists studying environmental systems, as well as for earth, soil, environmental scientists.

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**Heavy Metal Contamination of Soil. Problems and Remedies.** I. Ahmad, S. Hayat and J. Pichtel. Science Publishers, Enfield and Plymouth, 2005, x + 252 p. ISBN 1-57808-385-0. Hardcover.

Contamination of soil with heavy metals is a significant problem on numerous industrial and other sites worldwide. Heavy metal releases to the environment have been increasing in many locations as a result of industrial, agricultural and defence-related activities and technological developments, posing serious threats to public health and to local and regional environments. Land application of wastewater from municipal sources, including those mixed with industrial effluent, is one means of disposal of metal-containing waste and for recycling plant nutrients and organic matter for crop production. Such land application practices are becoming increasingly significant as the availability of safe drinking water and adequate quality of irrigation water is declining in many areas.



Although land application may provide a cost-effective method of disposal such wastes, the practice requires strict monitoring to regulate and to minimize environmental problems.

This book contains papers in the areas of heavy metal pollution, behaviour of heavy metals in soils, impacts of metal contamination on soil characteristics, and modern biotechnological approaches for decontamination/remediation of metal-contaminated soil. Price: USD 85.00.

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**Monitoring for impact: Evaluating 20 years of soil and water conservation in southern Mali.** Tropical Resource Management Papers 71. F. Bodnar. Department of Environmental Sciences, Erosion and Soil & Water Conservation Group, Wageningen University and Research Centre, 2005, viii + 218 p. ISBN 90-8504-281-X. Softcover. Also published as thesis.

A soil and water conservation (SWC) project has been going on in southern Mali since 1986. No final evaluation was undertaken to learn lessons from this long-term and large-scale experience. The objective of the present research was to find out how to evaluate impact, what the in Mali has been, and which recommendations could be made for monitoring and evaluation of SWC projects. A reconstructed logical framework made it possible to find out what was needed for the impact evaluation, what was available from project monitoring and external monitoring, and what additional data and analyses were required. Missing data were substituted by reconstructed baselines and virtual time series. Between 1988 and 2003, agriculture has expanded and intensified, but crop yields have declined and nutrient balances are still negative. Further intensification is needed to halt and reverse the yield decline. The cause-effect chain between project activities and impact showed that the SWC extension approach was effectively increasing farmer adoption of SWC measures. Farmer adoption steadily increased, spread to neighbouring villages and continued after project withdrawal. Erosion control measures reduced erosion with 50-70% and improved crop yields with 5-12%. Current annual farmer benefits of increased cotton production largely outweigh the annual SWC extension costs during the project. SWC projects are recommended to complete the logical framework and monitor accordingly, and to collaborate with external monitoring for a more efficient evaluation of impact. Achieving impact may take longer than the project life span. Therefore, project activities should be embedded in a long-term national program. It also implies that to assess impact after a short project period requires proxy impact indicators that reflect a continuing change, rather than an end-status.

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**Adoption of terraces in the Peruvian Andes.** Tropical Resource Management Papers 72. H. Posthumus. Department of Environmental Sciences. Erosion and Soil & Water Conservation Group, Wageningen University and Research Centre, 2005, viii + 202 p. ISBN 90-6754-957-6. Softcover. Also published as thesis.

Soil erosion is a serious constraint for agriculture and rural development in developing countries. Many efforts are made to promote soil and water conservation (SWC) among farm households. However, adoption of SWC practices is often disappointing. The study analyses the benefits of terraces and the adoption behaviour of farm households in the Peruvian Andes. The main beneficial effect of terraces is the increased water availability in the soils. However, terraces will only result in increased production if it is combined with intensified crop management or with crops with high market value. The decision to participate in a SWC-oriented program plays a key role in the adoption process. Programs with a top-down approach have a strong influence on the adoption decision. Participants of these programs installed SWC practices on the rainfed and degraded fields with steep slopes that are used for extensive agriculture or pasture. Participants of a participatory program have more individual control on the adoption decision, and they installed terraces on the less degraded fields in order to intensify agricultural production. Production functions revealed that terraces do not result in a significant increase of agricultural output



at household level, but labour productivity did increase. The functioning of factor markets explained the effect of terraces on the marginal product of land and labour. Terraces have the potential to increase agricultural production and factor productivity, but whether this is of interest of a farm household, depends on the existing markets. Therefore, programs have to take into account the scarcity of production factors and the opportunities of local markets. As conditions differ per region, SWC interventions should be decentralised.

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**Optimisation of nutrient cycling and soil quality for sustainable grasslands.** S.C. Jarvis, P.J. Murray and J.A. Roker, editors. Wageningen Academic Publishers, Wageningen, 2005, 450 p. ISBN 90-7699-871-X. Hardcover.

This book brings together two aspects of grassland soil management which, by and large, have hitherto been considered separately. Issues related to nutrient cycling and soil quality have dominated research directed towards aiding broad and local scale policy issues for improving land use. Protecting the environment and maintaining/preserving natural habitats and biodiversity, tend to be considered separately. In this book, the editors attempt to bring what are, in reality, inseparably aspects of grassland soil characteristics together and consider physical, chemical and biological components of soils, their interrelations and the way that they influence nutrient transformations and flows and soil quality. Bringing together international expertise and experience does much to progress understanding and points ways forward to maintain what is a base resource, our soils, whether it be for production targets, environmental benefits or for maintenance of natural ecosystems for future generations. This volume is useful to all those interested in soils and their function, and all grassland managers, whether their aims are directed at producing food, forage or fibre of sustainable quantity and quality or at maintaining, restoring or encouraging above and below ground biodiversity.

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**Nutrient management in agricultural watersheds: a wetlands solution.** E.J. Dunne, K.R. Reddy and O.T. Carton, editors. Wageningen Academic Publishers, Wageningen, 2005, 250 p. ISBN 90-7699-861-2. Softcover.

Nutrient enrichment of water resources by inputs of nitrogen and phosphorus, which can lead to eutrophication, is still a water quality problem in agriculturally dominated watersheds around the world. Internationally, wetlands both constructed and natural are increasingly being used to help reduce both point and non-point source nutrient and contaminant loss from agricultural practices. This publication contains papers presented at the symposium on "Nutrient Management in Agricultural Watersheds: A Wetlands Solution", which was held in May 2004 in Wexford, Ireland. The proceedings cover aspects of water quality within agricultural watersheds; management practices to mitigate contaminant and nutrient loss from agriculture; wetland biogeochemistry; wetland functions and values within agricultural dominated landscapes; case studies of wetlands used to retain nutrient and contaminant loss from agriculture; and finally some management and policy issues concerning wetlands are presented. The book provides an interdisciplinary synthesis of experiences in Europe and the USA on the use of wetlands within agricultural watersheds.

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**Mapping of the Soil.** J.-P. Legros. Science Publishers, Enfield, 2006, xv + 411 p. ISBN 1-57808-363-X. Hardcover.

This is a translation of the book in French: *Cartographies des sols*, Presses polytechniques et universitaires romandes, Lausanne, 1996 (ISBN 2-88074-298-6). The author modified and updated the text for this English edition in 2004. This book is addressed to all those who must prepare and use soil maps: mappers, agronomists, naturalists and students of rural engineering, geology or ecology. Its objectives are to present mapping methods relevant to the soil mantle and to consider recent advances made in the discipline through the use of geographic information systems, databases, multicriteria analysis, fuzzy set theory and computer modeling; thus it fills a certain lacuna because no important synthesis of the subject has been published for many years. The book is divided into 10 chapters that discuss methodological foundations, different phases of work, computer processing, applications and, lastly, the current state of the art in various countries, such as the USA, Canada, France and others. For small scale syntheses, pure soil mapping gives way to landscape mapping that deals both with soils and components of the environment (morphology, vegetation, etc.). The book is also an introduction to this kind of holistic approach in which strict scientific methodology must also be maintained.

The author was one of the vice-presidents of the former IUSS Commission V from 1994 – 1998.

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**La mesure de la conductivité hydraulique dans les sols.** Choix des methods. J.-C. Chossat. Editions Tec & Doc, Lavoisier, Londres, Paris, 2005, 720 p. ISBN 2-7430-0653-6. Cet ouvrage rassemble et présente, de façon non exhaustive, la plupart des méthodes utilisées en France et dans le monde pour réaliser des mesures de conductivité hydraulique, au champ et au laboratoire, en milieu saturé ou non. Chaque méthode est décrite avec son principe, le matériel nécessaire à sa réalisation et la résolution qui permet d'accéder à la valeur de la conductivité hydraulique. Ses avantages et ses inconvénients sont examinés. Les équipes ayant travaillé au moyen de chaque technique présentée sont clairement indiquées afin de permettre au lecteur de les consulter. Pour les méthodes les plus utilisées, un exemple chiffré est donné et des fiches de relevés de résultats sont proposées. Des tableaux de synthèse permettent de comparer les méthodes et faciliteront le choix entre les différentes mesures, selon l'objectif fixé et l'investissement en temps et en matériel. Ce guide s'avérera incontournable pour les techniciens et les ingénieurs en environnement et en particulier pour ceux qui abordent les techniques de remédiation des sols. Il s'adresse également directement aux bureaux d'études privés et aux organismes d'état qui se penchent sur les ressources en eau et leur utilisation. Il sera précieux pour les enseignants et les étudiants en géologie, géotechnie, en hydrologie et en génie civil.

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**Nitrate, Agriculture and the Environment.** T.M. Addiscott, with contributions from A.J. Gold, C.A. Oviatt, N. Benjamin and K.E. Giller. CABI Publishing, Wallingford, 2005, xi + 279 p. ISBN 0-85199-913-1. Softcover.

There is widespread public concern about the effects of nitrate derived from farming on water quality and public health. But research on nitrate during the past decade has revealed wide discrepancies between public perceptions and reality. The idea that nitrate is a threat to health has been discredited and current limits on nitrate in potable water are therefore unnecessarily stringent. Phosphate, rather than nitrate, is the nutrient that limits algal blooms in freshwater. The main problems from nitrate are ecological changes in coastal and estuarine waters and nitrous oxide in the atmosphere. This gas, largely derived from nitrate, is a threat to the ozone layer in the stratosphere and is also a greenhouse gas. This book builds on *Farming, Fertilizers and the Nitrate Problem* by Addiscott, Whitmore and Powlson (CABI, 1991), but has been reconstructed to take account of new developments and to bring out more clearly the role of politicians and economists in the



"nitrate problem". This book will be of significant value to students of soil, crop, environmental and pollution sciences.

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**Drafting Legislation for Sustainable Soils: A Guide.** IUCN Environmental Policy and Law Paper No. 52. I. Hannam and B. Boer. IUCN – The World Conservation Union, Gland and Cambridge, 2004, x + 100 p. ISBN 2-8317-0813-3. Softcover.

The World Summit on Sustainable Development recognised the importance of promoting programs for the environmentally sound, effective and efficient use of soil fertility. This Guide, intended to primarily serve as a resource for States to assist their endeavours to reform legislation and institutions to protect and manage soils, will contribute to that aim. There are many reasons that may trigger the development and adoption of a sound legal and institutional framework for sustainable soils, such as the necessity to create an enabling environment for farmers and agencies to adopt sound management practices to enhance productivity levels of water and land. A sound legal and institutional framework for managing soils is not only critical for food production, but also for biological diversity conservation and poverty alleviation. This Guide addresses all these aspects. One of the most striking features of this publication is that it proposes legal and institutional elements that specifically address the needs of disadvantaged people, particularly women. This is unique, as there are not many examples of legal frameworks relating to natural resources management that specifically seek to accommodate the concerns of the poor. This Guide also highlights the need for national soil policy and sets out the elements of a soil management plan.

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**Land Use Change and Mountain Biodiversity.** E.M. Spehn, Chr. Körner and M. Liberman, editors. CRC Press, 2006, 376 p. ISBN 0-8493-3523-X. Hardcover.

Part of the worldwide biodiversity program DIVERSITAS, the Global Mountain Biodiversity Assessment (GMBA) assesses the biological richness of high-elevation biota. GMBA's focus includes the uppermost forest regions or their substitute rangeland vegetation, the treeline ecotone, and the alpine and nival belts. The GMBA explains the causes of biological richness and how diversity changes over time. Part of the agenda is the assessment of land use impacts. These assessments are critical in low-latitude regions, where land use pressure on upland biota is the greatest. The present volume is derived from a peer-reviewed process that followed presentations offered at two GMBA workshops in Tanzania and Bolivia. It contains information from all major mountain regions, with a particular focus on the Andes and on African mountains. With contributions from more than 50 researchers, the book begins with an overview chapter on high-elevation land use, biodiversity and ecosystem functioning. Highlighting the effects of fire and grazing, it provides a synthesis of human impacts on highland biodiversity. The book then reviews anthropogenic disturbances of biodiversity and analyses forest structure and tree regeneration in subalpine wood pastures.

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**Environmental Soil-Landscape Modeling. Geographic Information Technologies and Pedometrics.** S. Grunwald, editor. CRC Press, 2006, 488 p. ISBN 0-8247-2389-9. Hardcover.

This book presents the latest methodological developments in soil-landscape modelling. It analyses many measurement tools, and explains computer-related and pedometric techniques that are invaluable in the modelling process. This volume in the series Books in Soils, Plants and the Environment provides an in-depth overview of the history of soil-landscape modeling. By uniting the work of soil scientists from diverse backgrounds, it promotes quantitative soil-landscape modelling as a joint venture among those involved with soil geography, soil genesis and pedometrics. According to Gerard Heuvelink, Chair of the IUSS Commission on Pedometrics, writes: "Through her choice of authors and subjects, Sabine Grunwald has created a comprehensive and well balanced book. I am confident that it will be stimulus and source of inspiration for all soil scientists working on the development of an operational model of soil-landscape evolution."

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**Soil Erosion and Carbon Dynamics.** E. Roose, Chr. Feller, B. Barthès, R. Lal and B.A. Stewart. CRC Press, 2005, 376 p. ISBN 1-56670-688-2. Hardcover.

In addition to depleting nutrients necessary for healthy crops, soil erosion processes can affect the carbon balance of agroecosystems, and thus influence global warming. While the magnitude and severity of soil erosion are well documented, fluxes of eroded carbon are rarely quantified. The present volume brings together a diverse group of papers and data from the perspectives of sedimentologists, soil scientists and agronomists to resolve whether soil erosion on carbon is a beneficial or destructive process. The book collects quantitative data on eroded carbon fluxes from the scale of the agricultural plot to that of large basins and oceans. It quantifies the magnitude of eroded carbon for different management practices as compared to normal carbon sequestration and discusses the fate of the eroded carbon and whether or not it is a source or sink for atmospheric carbon dioxide. Finally, the book offers data reflecting the impact of soil erosion on soil, water and air quality. Other important topics include solubilisation, the determination of mineralization rates, carbon transfer and sediment deposition, as well as carbon dioxide emissions, global warming potential, and the implications of soil erosion on the global carbon cycle and carbon budget.

The book is based on the presentations at the International Colloquium Land Uses, Erosion and Carbon Sequestration, held in Montpellier, France.

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**Soil Sampling, Preparation, and Analysis. Second edition.** K.H. Tan. CRC Press, 2005, 680 p. ISBN 0-8493-3499-3. Hardcover.

As with the first edition, the purpose of the present second edition is to assist students, technicians and scientists in the performance and understanding of soil sampling and analysis. It gives information about the most commonly used methods used in modern soil laboratories around the world. All methods are lucidly illustrated with original results gathered during many years of hands-on experiments conducted by the author and his students. The text has been extensively revised and expanded. New to second edition are three new chapters on soil and plant test methods, new information about electron microscopy and nuclear magnetic resonance.

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**Water Flow in Soils. Second edition.** T. Miyazaki. CRC Press, 2005, 440 p. ISBN 0-8247-5325-9. Hardcover.

This book bridges the fields of soil physics – where descriptions of water flow tend to be microscopic – and hydrology – where they tend to be macroscopic. This book conveys the fundamental concepts of water flow in soils with clear and essentially nonmathematical explanations. Using more than 750 illustrations, figures and equations, the author introduces soil water flow, taking both a phenomenological and analytical approach. The second edition contains revised information on the inverse analyses of infiltration and water flow in deep soils; up-to-date subjects relating to fingering flows; ponding times of slopes; water flow under temperature gradients in field and in open soil columns; recent progress on the effects of microbiological factors on water flow in soils; and other recent research topics.

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**Encyclopedia of Soil Science. Second edition, in 2 volumes and online.** R. Lal, editor. CRC Press, 2005, 1600 p. ISBN 0-8493-3830-1. In two volumes. Hardcover.

Upholding the high standard of quality set by the first edition, this second edition is comprised of a vast array of new and updated articles showcasing the latest research and practices in the chemistry and analysis of soils, agricultural and sustainable development, environmental quality, natural resource management and ecology. A valuable reference for anyone seeking information on all aspects of soil science, this resource presents hundreds of entries on tillage, irrigation, erosion control, minerals, groundwater, degradation. It outlines the agricultural, environmental, industrial, and cultural components that affect soil productivity. The book offers a quick access to peer-reviewed articles on all branches of soil science – from mineralogy and physics to soil management and restoration, and it assesses the physical and hydrological properties of soil in natural and agricultural ecosystems.

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**Handbuch des Bodenschutzes. Bodenökologie und –belastung. Vorbeugende und abwehrende Schutzmassnahmen.** 3. Auflage. H.-P. Blume, Herausgeber. Ecomed Biowissenschaften, Landsberg am Lech, 2005, xix + 914 S. ISBN 3-609-65853-3.

Die Neuauflage des Handbuches des Bodenschutzes bietet das gesamte aktuelle Wissen zum Bodenschutz. Das Buch berücksichtigt alle Aspekte der Bodennutzung, möglicher Bodenbelastungen sowie deren Vermeidung oder Behebung. Das Buch ist in fünf Teile gegliedert. Im ersten Teil werden die Funktionen der Böden als Naturkörper, als Lebensraum von Organismen und Wurzelraum für Natur- und Kulturpflanzen, als Regulatoren des Landschaftswasserhaushalts, als Filter, Puffer und Transformatoren für sauberes Grundwasser und Gewässerwasser etc. dargestellt. Der zweite Teil befasst sich mit den vielfältigen Veränderungen und Belastungen, die Böden bei ihrer Nutzung durch den Menschen erfahren. Hier werden Bodenverbrauch durch Versiegeln, Abgraben and

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**Managing Arsenic in the Environment. From soil to human health.** R. Naidu, E. Smith, G. Owens, P. Bhattacharya and P. Nadebaum, editors. CSIRO Publishing, 2006, 656 p. ISBN 0-643-06868-6. Hardcover.

Arsenic is one of the most toxic and carcinogenic elements in the environment. This book brings together the current knowledge on arsenic contamination worldwide, reviewing the field, highlighting common themes and pointing to key areas needing future research. Contributions discuss methods for accurate identification and quantification of individual arsenic species in a range of environmental and biological matrices and give an overview of the environmental chemistry of arsenic. Next, chapters deal with the dynamics of arsenic in groundwater and aspects of arsenic in soils and plants, including plant uptake studies, effects on crop quality and yield, and the corresponding food chain and human health issues associated with these exposure pathways. These concerns are coupled with the challenge to develop efficient, cost-effective risk management and remediation strategies: recent technological advances are described and assessed, including the use of adsorbents, photo-oxidation, bioremediation and electrokinetic remediation. The book concludes with 11 detailed regional perspectives of the extent and severity of arsenic contamination from around the world. It will be invaluable for arsenic researchers as well as environmental scientists and environmental chemists, toxicologists, medical scientists, and statutory authorities seeking an in-depth view of the issues surrounding this toxin.

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**Symposium of Arsenic in Aquifers, Soils and Plants: Implications for Management.** IDB Bhaban, Dhaka, Bangladesh, 16-18 January 2005.

This CD contains the Abstracts and Power Point Presentations of the 36 papers delivered at the symposium. Information is given about the distribution, content, movement and redistribution of arsenic, potential of contamination of crops, health hazards. Interesting presentations for anyone concerned about arsenic in water, soil and crop systems.

For a copy, contact Dr. Alfred Hartemink ([alfred.hartemink@wur.nl](mailto:alfred.hartemink@wur.nl)).

**World Spatial Metadata Standards: Scientific and Technical Descriptions, and Full Descriptions with Crosstable.** H. Moellering, editor. Published on behalf of the International Cartographic Association by Elsevier, Amsterdam, Boston, 2005, xix + 689 p. ISBN 0-08-043949-7. Hardcover.



During the last decades we have witnessed a tremendous growth in the building of geographical datasets. The transition from manual to digital systems for mapping, and for registration of real properties, population and natural resources resulted in a series of not compatible data. In 1980s work on standardization was initiated, first in the United States and then country by country until the work became coordinated by ISO. Nowadays, it is obvious that a geospatial data infrastructure is needed, where data can be integrated both horizontally between themes and vertically from the local level to the entire world. The first big breakthrough was the development of national and international spatial database transfer standards, which resulted in the book "Spatial Data Transfer Standards 2" (1997, ISBN 0-08-042433-3). The current work examines all National and International spatial metadata standards existing in the world, and should be seen as a companion volume. The new book utilizes a detailed set of assessment characteristics divided into 12 initial groups, 58 secondary classes and about 278 tertiary characteristics. Each National and International standard, plus a few application profiles are examined in great detail. Also included with many of the characteristics are Obligation Parameters, which specify whether a characteristic is Mandatory, Conditional or Optional. Together these characteristics and obligation parameters recognize almost every possible capability that a spatial metadata standard might have. The book is intended for all those interested in spatial data standards, including analytical cartography, GIS, photogrammetry, remote sensing, surveying, geodesy, biology, geology, demography and related subject matter sciences. Price: USD 176.00, GBP 110.00; EUR 160.00.

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**State of the World 2006. Special Focus: China and India.** A Worldwatch Institute Report on progress Toward a Sustainable Society. D. Nierenberg, project director and L. Stark, editor. W.W. Norton, New York and London, 2006, xxvii + 244 p. ISBN 0-393-32771-X. Softcover.

As India and China become world-class economies, they are set to join existing industrialized nations as major consumers of resources and polluters of local and global ecosystems. Vigorous discussions are under way in both countries at every level about the right development paths to follow, including "leapfrogging" the technologies, policies and even the cultures that now prevail in many western countries. The publication also looks at actions corporations can take to be more socially responsible; examines the potential socioeconomic, health, and environmental implications of nanoscale technologies; assesses the impacts of large-scale development of biofuels on agriculture and the environment; describes mercury sources, industrial uses, and health hazards worldwide; and provides an overview of the need to safeguard freshwater ecosystems, with examples of proven approaches in cities, villages, and farming regions around the world.

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**The Biology of Soil. A community and ecosystem approach.** Biology of Habitats series. R. Bardgett. Oxford University Press, 2005, 256 p. ISBN 0-19-852503-6, softcover; 0-19-852502-8, hardcover.

Soil science has undergone a renaissance in recent years with an increasing awareness of the importance of soil organisms and below-ground biotic interactions as drivers of community and ecosystem properties. This book is unique amongst texts of its type in its explicit consideration of above-ground/below-ground feedback, herbivores, and the functional significance and regulation of soil biodiversity. This book is written for students



taking courses in soil ecology and ecosystem science, as well as professional researchers in the field of ecology and environmental biology requiring a modern overview of the topic.

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**Assemblage of cutans in texturally differentiated soils (case study for Albeluvisols of the East European Plain).** M.A. Bronnikova, V.O. Targulian – Moscow: PBMC "Akademkniga", 2005. – 197 p.: il. (In Russian, supplied with English title, extended summary (8 pages) and contents, ISBN 5-94628-199-2.

The whole diversity of illuviation cutans within the four pedons of the texturally differentiated soils developed on loess-like silty loams were studied. This cutans diversity is considered by authors as a single assemblage of cutans and was perceived as one of important blocks of soil memory for these soils. The detail macro-, mezo-, micro-, and submicromorphological and analytical characteristics of the cutans' assemblage in the Albeluvisols were obtained. Basing on these data the combination, depth distribution and time-dependant sequences of the eluvial-illuvial processes in these soils were described: translocation of clay, silt and sand particles in suspensions, humus and Fe- Mn oxides in solutions. It was concluded that the illuvial formation of cutans started on early stages of the Holocene pedogenesis but still it is the currently active process in Albeluvisols under investigation. The set of post-illuvial processes transforming cutanic material after its deposition was identified: gleyzation, mechanical and chemical degradation, cracking and structuring, humus enrichment in situ, etc. The role of cutans as microbarriers and membranes within the soil body and their effect on the soil system functioning is briefly discussed. The book is addressed to pedologists, paleopedologists, soil micromorphologists, physicists and hydrologists as well as to environmental geochemists. It can also be used for teaching in order to demonstrate the very complex and intrinsic arrangement of soil systems. For more information, please contact authors: Maria Bronnikova [mbmsh@mail.ru](mailto:mbmsh@mail.ru) and Victor Targulian [targul@centro.ru](mailto:targul@centro.ru)



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