NEWSLETTER

3/2008

ESSC EUROPEAN SOCIETY for SOIL CONSERVATION

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Cover photo: The Walnut Gulch variable intensity rainfall simulator is used to characterize sites for hydrologic and erosional response. Tombstone, Arizona, USA (photo courtesy of Dr Jeffry Stone, USDA-ARS, Tucson, USA).

E.S.S.C. NEWSLETTER 3/2008

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Contents

This issue of the ESSC Newsletter presents the sixth of our 'Guest Editorials.' This is an opportunity for leading authorities in the soil science community to offer their perspectives on issues relating to soil conservation. The sixth in our series is from Mark Nearing (Tucson, Arizona, USA). Eventually, we envisage this collection of essays developing into an authoritative book.

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Assessing the benefits of conservation practices in western rangelands of the United States: the CEAP Rangelands Project

The Federal Government of the United States expended in the order of $20,000,000,000 primarily in direct payments to farmers and ranchers between 2002-2007 for the designated purpose of implementing farm and ranch conservation practises. These payments came under a number of programs, including the Environmental Quality Incentives Program (a cost-share program), the Conservation Reserve Program (for taking highly erodible land out of production in order to achieve conservation goals), the Wetland Reserve Program, the Wildlife Habitat Incentives Program, the Conservation Security Program (a watershed focused effort) and the Grassland Reserve Program. These programs were authorized by the Farm Security and Rural Investment Act (2002), also known as the 2002 Farm Bill, and the amount allocated represents a substantial increase in funding for conservation programs in the USA.

The Conservation Effect Assessment Project (CEAP) was initiated in 2003 by the Natural Resources Conservation Service (NRCS) and the Agricultural Research Service (ARS), in collaboration with other USDA and Federal agencies, with the goal of quantifying the environmental benefits of conservation practises implemented through the Farm Bill programs. In addition to the retrospective analysis designed to assess benefits of dollars spent, CEAP is also designed with a prospective view to aid policy-makers and program managers to implement and modify existing programs to more effectively and efficiently meet goals.

CEAP includes two reporting scales, a national assessment and a watershed assessment. The national assessment is being implemented to track environmental benefits over time at the national scale. In selected regions of the country, watershed studies are being initiated

to provide more in-depth assessments at a finer scale of resolution than is possible at the national level. The watershed studies will provide additional research findings and insights on the expected on- and off-site effects of conservation practises on hydrology, forage production, nutrients, pathogens and other variables of interest. The watershed assessments will be used to improve the estimates and performance of the national assessment activities. Reports will be published that document the environmental benefits and trade-offs of conservation practises.

The CEAP Project for croplands was initiated in 2002 and is well advanced in terms of both the national and watershed scale work. The CEAP Project aimed at assessing conservation on grazing lands was initiated in 2007. Grazing lands include the rangelands of the West and pasturelands of the eastern part of the country. Initial focus will be on the far western shrub and grasslands, followed by focus on eastern pastures beginning in 2008, and the central plains in 2009. This report focuses on the rangeland CEAP assessment.

The extent of the Project is quite large. Rangelands comprise ~40% of the landmass of the USA, including nearly 80% of the lands of the western states. Much of the rangelands in the west are sparsely populated, and conditions on that land are not well documented over very large areas. Rangelands provide valuable grazing lands for livestock and wildlife and serve as a source of high quality water, clean air and open spaces for the benefit of both society and nature. Rangelands usually have natural vegetation dominated by grasses, forbs and shrubs, and the land is generally managed as a natural ecosystem. They are complex, and in some instances fragile, ecosystems. While rangelands occur in every region of the North American continent, they are the dominant land type in arid and semi-arid regions.

Some of the primary conservation practises implemented on rangelands include prescribed grazing, invasive species control, fire management, brush management, fencing, water distribution, range seeding and riparian management. These conservation practises are designed to reduce losses of soil, nutrients, pesticides, pathogens and other biological and chemical materials from agricultural lands, conserve natural resources, enhance the quality of ecosystems and enhance wildlife habitat. The environmental benefits of grazing lands conservation practises have not previously been quantified for reporting at the national scale. Moreover, while a limited body of literature exists on the effects of conservation practises at the field level, there are few research studies designed to measure the effects at the watershed scale. CEAP is an on-going mix of data collection, model development, model application and research. The two main components of CEAP are a national assessment with modelled estimates and the landscape scale component that quantifies the environmental benefits from specific conservation practises at a watershed scale.

The principal grazing lands resource concerns that CEAP plans to evaluate are: a) Plant community status, condition and dynamics, b) Water quality (nutrients, pathogens and sediment delivery to lakes, rivers and streams), c) Soil quality (including soil erosion and carbon storage), d) Water conservation (flood and drought protection), and e) Wildlife habitat.

The strategy for the Rangeland National Assessment encompasses a three part process:

1. A new process based model is under development for assessing erosion rates on rangelands. The 'Rangeland Hydrology and Erosion Model' (RHEM) is being developed based

exclusively on data collected from rangeland erosion experiments and is designed to use data such as are routinely collected by range managers. RHEM will be used to calculate runoff and erosion at the site scale. Efforts are currently underway to apply RHEM to National Resource Inventory (NRI) sampling sites. The USDA collects site-scale inventory data on a routine basis and there are currently as many as 17,000 rangeland sites in the US for which data have been collected and may be applicable for CEAP efforts. Once the protocol for using the NRI data is established, and current erosion rates are estimated on as many sites as possible, the intention is to use remotely sensed information to spatially expand the site-scale information. Current methods are in place to estimate vegetation cover using remotely sensed data and methods are being developed to use that information to inform the models.

Source terms for RHEM are based on rangeland data, which models the splash and sheet flow effects as the dominant process on undisturbed natural grasslands. The unit scale for splash and sheet erosion is the rainfall simulator plot, which is larger than the unit scale of interrill areas in cropland environments. This was done in order to incorporate the larger scale of rangeland heterogeneity and complexity associated with complex vegetation patterns on most rangeland sites. RHEM models concentrated flow erosion, which is active on degraded shrublands and disturbed lands (e.g. those having been exposed to over-grazing, wildfire and drought). An important aspect of the model relative to rangeland application by rangeland scientists is that RHEM is parameterized based on plant growth form classification using the data that are typically collected for rangeland management purposes (e.g. NRI and rangeland health assessments). RHEM will be implemented and available in an interactive, web-based form by the end of 2008.

2. Rainfall simulation experiments are planned for selected USGA 8-digit Hydrologic Unit Code (HUC) scale drainage basins in Arizona, Nevada and Idaho, for the purpose of collecting data to evaluate models and methods relative to attaining CEAP goals. Experiments will focus on the evaluation of hydrologic and sediment response of states within designated Ecological Sites, which are defined as "a distinctive kind of land with specific characteristics that differs from other kinds of land in its ability to produce a distinctive kind and amount of vegetation." Ecological Sites are the categories upon which NRCS recommends management decisions. For example, recommended levels of grazing will be dependent upon Ecological Sites, varying as a function of site resistance (stability relative to stressors) and resiliency (ability to recover). Each Ecological Site may have multiple states depending upon how the site has been changed by various stressors or management practises, which include grazing, drought, rangeland renovation and seeding, brush encroachment or control and invasive species. Important characteristics on an Ecological Site include soil, slope and annual precipitation regime. Preliminary results in Arizona show that hydrologic differences between states within Ecological Sites are well described by differences in RHEM model parameters (Fig. 1).

3. The RHEM model will be incorporated into both the KINEROS watershed-scale model and the SWAT basin scale model in order to conduct 8-digit HUC level analyses across the west, similar to the assessments that have been completed on croplands.

Projected benefits of the rangeland CEAP work include: 1) a comprehensive literature review and synthesis expected to be published in 2009, 2) a determination of the status and extent of western rangelands, 3) development of a database for national, regional and local assessments, 4) documentation of management practises currently in place, 5) a better

understanding of the on-site and off-site benefits and impacts of practises in place, and 6) the development of new site-specific risk assessment tools acceptable for rangeland usage (e.g. RHEM and range plant growth models).

Additional benefits may include: 1) better invasive species management based on the ability to use remote sensing to detect new outbreaks, 2) better understanding of the impact of natural hazards such as wildfire and drought on range condition, and the ability to use precipitation, soil moisture and temperature to predict fire and drought risk, 3) better understanding of ecological sites through a scientific assessment and documentation of hydrologic and erosional differences as a function of states within ecological sites, and 4) an advanced scientific understanding of basic processes and rates of erosion across scales.

Up-to-date information on the CEAP Project may be found at:
http://www.nrcs.usda.gov/TECHNICAL/NRI/ceap/index.html.

The text of the Farm Security and Rural Investment Act (2002) may be accessed at:
http://www.nrcs.usda.gov/about/legislative/pdf/PLaw107171.pdf.

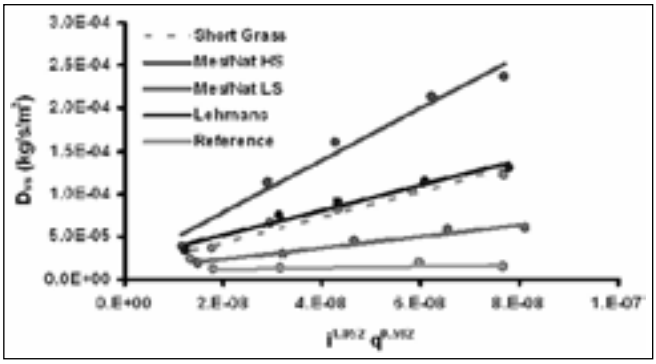

Fig.1 Variability of Kss among states within the Loamy Uplands Ecological Site of Arizona, where $D_{SS}=k_{SS}\times I_e^{1.052}\times q^{0.592}$ is the splash and sheet erosion source term in RHEM (Courtesy Dr Jeff Stone, USDA-ARS, Tucson).

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In his Guest Editorial in Newsletter 2008/1 Professor Roy Morgan wrote: *"The view widely held in certain circles that we know enough about the physical processes of erosion and that erosion control is now a socio-economic issue, is wrong."* I do not agree with this. The principles of soil conservation are well-known for over 80 years now. The techniques of soil conservation, that are based on these principles, were described in detail in 1939 by H.H. Bennett in his book 'Soil Conservation'. This includes the notion of the importance of raindrop impact for soil surface sealing and reduced infiltration (p. 98-100 of Bennett's book). The only new development in soil conservation in later years has been the introduction of conservation tillage (minimum tillage, zero tillage). So, it is known for decades how soil erosion can be effectively controlled. Why then, are conservation measures not applied by farmers on as large a scale as would be desirable? Evidently, this must be due to some other cause or causes than a lack of knowledge. It is more likely that there is a lack of effective incentives to make farmers take action (Sanders, 2008).

What can be the role of the ESSC in this? ESSC is the 'European Society for Soil Conservation.' Soil conservation is a very practical matter, unlike the scientific study of the physical processes of soil erosion. The main role for soil conservation science is to supply farmers with soil conservation techniques that are geared to the specific conditions of soil, slope and climate on their fields and the specific crops they grow. This involves trial-and-error work with various farming and cropping systems of erosion sensitive crops, such as were carried out in South-Limburg, The Netherlands (Kwaad et al., 1998, 2006).

What can be expected from soil erosion modelling? Not much. Firstly, model performance to date is poor. Secondly, models by themselves do not give rise to new or improved conservation measures or techniques. Models are meant to quantify erosion rates under techniques that are already known. But thirdly, and most importantly: European erosion models have always been more research tools than 'agricultural extension' or soil conservation tools, as Jetten and Favis-Mortlock (2006) put it in the state of the art work 'Soil Erosion in Europe.' Thus, models are not farmer-friendly. In fact, being research tools, models are not meant to be used by farmers at all. This is a remarkable situation: so much effort spent by erosion scientists on modelling and so little gain for soil conservation!

Little feedback from farmers can be found in the Newsletter of the ESSC. Farmers are under pressure to act on erosion. Pressure mainly comes from outside agriculture, because of off-site effects (flooding and mud problems). What sort of help or advice do farmers want or expect from us scientists? As long as we do not invite farmers to take part in the exchange of ideas, we will never know what their perception of the problem is. In fact, farmers tend to go their own way. A lot more is going on than reaches the pages of the Newsletter of ESSC. This becomes quickly apparent when one searches the internet for soil conservation initiatives in Europe. I have placed links to some relevant websites on erosion control from

The Netherlands and Belgium (plus a few from other European countries) on the following site:
http://www.kwaad.net/SoilConservation.html

Most of the sites are in the Dutch language, because the information is meant for the farming community. It is important to realize that most of this information cannot be found in the scientific journals. From these sites, it becomes clear that farmers and farmers' organizations are well under way in adapting and adopting conservation cropping techniques and setting up regulations, at least in The Netherlands.

In order to keep the scientific community informed of any conservation developments that are taking place in the farming communities of European countries, it would be a good idea to start a series of reports in the Newsletter of the ESSC under the title 'Reports on soil conservation in practice.' This would be in line with the aims of the Society as published on the back page of the Newsletter.

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Editor's note:

It is a positive development to receive informed debate and discussion on issues. Please feel free to forward your considered views on soil conservation issues to the Editorial team.

Soil-Net.com: A soils-focused educational Internet resource for school

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Introduction

As one of the three key natural resources upon which life depends, alongside air and water, soil often receives a lower priority in the classroom than it warrants. There are many reasons for this, including the nature and range of support materials available to teachers. In the UK, although soil issues do appear as a direct topic within the taught school curricula, there are also a great many indirect opportunities to draw soils-related issues into a broad range of environmental, social and scientific topics. Studies have found that although there is available a wealth of soil-related information, services, education and related activities available for those who seek them, teachers often find this information both hard to find and interpret, especially given the lack of any common structure (Hallett et al., 2005). This inevitably leads to lost opportunities to underpin an important soil-centric message to the schools community.

In 2004, the UK Department for Environment, Food and Rural Affairs (Defra) produced a seminal soil-related policy document, 'The First Soil Action Plan for England: 2004–2006'

(Defra, 2004). This stated a number of actions, the first being that *"Defra will work with stakeholders to develop a programme of education and awareness of soil issues among the general public, those working with soils and the professionals that guide, advise or instruct soil managers."* Supported by Defra, Cranfield University's National Soil Resources Institute (NSRI) undertook a two-year project from 2005-2007 to develop a series of comprehensive methods and materials for educating young people aged from between 5–16 years old (UK Key stages 1-4) in the importance of soils (Hallett et al., 2006, 2007). This led to the establishment of the open-access educational web portal 'http://www.soil-net.com,' aimed especially at the schools age-range, together with a broad accompanying range of Soil-Net classroom, field and laboratory activities.

Project Guidance

Developing an educational resource of this ambition and nature demanded a range of specialist inputs. For Soil Science guidance the NSRI team were able to draw upon the expertise of Professor Peter Bullock, a Nobel-prize winning soil scientist of international repute. Together with his contribution, the NSRI team were able to set out a structure for the topics to be addressed and to collate and prepare relevant materials. In parallel with this, in order to ensure the important subject matters were communicated effectively, NSRI partnered with the Norwich School of Art and Design (NSAD). NSAD assumed responsibility for the visual and oral communication. Next, to guide the Project, a steering committee was assembled, including representation from the Defra Soil Policy Group, from the then Department for Education and Skills (DfES) and from the Bedfordshire and Luton Education and Business Partnership (EBP) acting as a 'Setpoint' for the National Science, Engineering, Technology and Mathematics Network (SETNET), a body mandated to support and provide opportunities for pupils and teachers to engage in meaningful activities in these subjects. The Steering Committee also comprised input from experienced professional educationalists. Importantly, the Project also benefited from occasional interaction with several key stakeholders. Comprising the Project guidance in this way helped the NSRI team to secure timely and expert advice and direction.

Soil-Net Structure

One of the initial tasks for the Project was to define a working structure for materials which would be developed. Considering the range of ages for the target audience, it was determined that not all topics would be prepared in a form suited for all age ranges. There was therefore anticipated a 'progression' through which students would move with age, with successively more detail becoming available. The universal 'Introductory Section' includes subjects like 'What Soil Is,' 'How Soils Form,' 'The Properties of Soils,' 'What Soils Can Be Used For,' and 'Soils As A Living Being.' A subsequent section deals with 'The Global Cycles,' including the nitrogen, oxygen, carbon, water and nutrients cycles. A substantial section was developed on 'Soil Functions,' addressing all the uses made of soils and highlighting the importance of soils in achieving these functions to support life on Earth. A further section addresses the 'Soils of Britain' and the 'Soils of the World.' Two concluding sections address 'Threats to World Soils' and 'Concerns for the Future of Soils.' Issues of soil conservation and soil threats are covered here in some detail.

For each of these topic themes, the Soil-Net web resource contains numerous textual resources, animations, interactive activities, case studies, features on school gardens, indoor and outdoor soil experiments, quizzes, interactive soil maps and 3D soil walks, as well as a host of other classroom-trialled teacher-support materials. Much of the material is designed for easy download for use offline.

In structuring the materials it became clear to the Project team that, given the importance of the subject matter, the range of material topics and themes to be covered would need to be broad and extensive. However, the Project team also perceived limitations in the extent and coverage of soil matters in the taught curricula. In order to link the Soil-Net materials to the curricula, 'Curriculum Maps' were developed that guided busy teachers to the appropriate sections of the extensive resources. Because of this, the Project was able to address a wider range of topics than might otherwise have been the case. In retrospect, this is felt to have been the correct course of action, as the audience today for Soil-Net in real terms extends well beyond the original target audience, both in terms of age ranges and geographical location. The approach adopted may also well serve translation of the materials to other countries where new Curriculum maps could be prepared relevant to local conditions. Overall, Soil-Net has core sections available for 'Primary' and 'Secondary' level education and for 'Teachers and Parents.'

Soil-Net in Use

The Soil-Net web portal was launched formally at the Association for Science Education (ASE) Annual Conference in January 2007. Since June 2006 to date, over which time statistics have been gathered for monitored pages, the website has attracted some 76,609 visits from 167 countries/territories (UK 53%), totalling some 499,280 associated page views. Hundreds of visits are made each day and some 530 other websites now link to Soil-Net.com.

An important aspect to the website is the facility for users to comment immediately and directly back to the Project team concerning the page being viewed. This has led to hundreds of comments being received; 340 from teachers, 700 from students; 50 from guardians, with others being unattributed. Where practicable and appropriate, these are acted upon.

Discussion and Future Developments

The conclusion of the Project led to the formulation of a number of recommendations as to how such a resource could be developed, supported and extended in the future, these may be considered as learning outcomes for developing such a resource.

Firstly, effective educational web resources are dynamic entities, in that they require continual maintenance and tending. This applies both to the technical context of the site provision (e.g. software changes), but also to the maintenance of the intellectual content (e.g. curricula changes). It is important that 'Future Sustainability' plans are put in place to manage and nourish the existing web resource.

Secondly, it is important to develop in parallel with such an enterprise an effective promotional campaign designed to reach the target stakeholder audience. For Soil-Net, crucially this means reaching KS1-4 teachers. It is imperative to seek to retain Soil-Net's place in the 'spotlight,' incorporating cross-linkages with other Government initiatives and relevant web resources to elevate the standing of Soil-Net in search index listings. The 'TeacherNet' site is one such popular resource operated by the Department for Children, Schools and Families (DCSF), which has referenced Soil-Net as an online publication (DCSF, 2008).

Thirdly, whereas the existing Soil-Net resource has focused exclusively upon the 5-16 age range, comments from existing users indicate clearly that there should now be given serious consideration as to the development of materials for age groups other than those served by the existing Soil-Net: these include the '16-19 age group' undertaking 'A Level,'

those in Further Education as well as vocational qualifications. It is a clear aim then that Soil-Net be extended to these groups. Comments from online users and teachers reflect this demand for subjects such as environmental science and geography, and horticulture as well as other land-based industries.

Lastly, it is considered that the materials in Soil-Net are well suited for the production of translations into other languages, for instance the recently proposed Welsh Soils Action Plan consultation exercise identifies in Action 27 (Welsh Assembly Government, 2008) the importance of translating resources such as Soil-Net (and the related Soilscapes viewer) into the Welsh language: 'syniad da!' (which means 'good idea!'). Certainly the structure of the existing materials will facilitate this process.

Soil-Net represents a powerful, popular and accessible teaching and educational resource for learning about the importance of soil. The web portal has been widely consulted and the materials have been used in many schools across the UK. Pleasingly, Soil-Net materials have also been utilized widely internationally, and this is one area for future development.

In memory of Peter Bullock, soil scientist, 1937–2008.

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THE SYSTEMATIC BUZZ-PHRASE PROJECTOR

Many of us are plagued by meetings which are neither interesting nor necessary. If you are lost for something to say, you could use the 'systematic buzz-phrase projector' below. This was devised by Philip Broughton, who spent his working-life employed by the US Public Health Service. He observed the most common terms used in meetings and simply put these into a matrix. Then, using three random numbers, it is possible to generate a 'buzz phrase' for your meeting. Colleagues will probably not understand the meaning of your buzzword, but may well think you have some deep and incisive comment!

Column 1		Column 2		Column 3	
0	Integrated	0	Management	0	Options
1	Total	1	Organizational	1	Flexibility
2	Systemized	2	Monitored	2	Capability
3	Parallel	3	Reciprocal	3	Mobility
4	Functional	4	Digital	4	Programming
5	Responsive	5	Logistical	5	Concept
6	Optional	6	Transitional	6	Time-phase
7	Synchronized	7	Incremental	7	Projection
8	Compatible	8	Third-generation	8	Hardware
9	Balanced	9	Policy	9	Contingency

NEW Ph.D. THESES

Editor's note:

The citation details of Ph.D. theses by ESSC members since and including 2004 have been added as an additional page to the ESSC web site. To date, 38 Ph.D. theses are quoted. On the ESSC web site, please look under 'Publications.' Please forward the citation details of any additional Ph.D. thesis completed since the year 2000 by an ESSC member to any of the Editorial team. We will then add the thesis citation details to the web site. No new Ph.D. theses are reported in this issue.

The Newsletter and supporting Ph.D. research

Editor's note:

At the ESSC Council meeting in Lleida (Spain) in September 2006, the interactions between the ESSC and younger soil scientists were discussed (see Newsletter 2006/3, p. 5-8). It was decided that the ESSC should be more proactive in its support of younger scientists. As part of that initiative, we welcome articles from both Ph.D. researchers and supervisors. We would like to hear from recent Ph.D. graduates; what advice and experience do you have which you would like to share with your colleagues in earlier stages of their research? We would also like to hear from current Ph.D. researchers; what are the factors which both encourage and limit progress? What are the particular challenges facing part-time Ph.D. researchers? We also invite contributions from experienced Ph.D. supervisors. What experience would you like to share with less experienced colleagues? If you are a less experienced Ph.D. supervisor, what supervisory issues do you find challenging? In short, please tell us "what I know now, which I wish I knew then!"

CONFERENCE REPORTS

None received.

Tsotne E. Mirtskhoulava (2007). SOIL EROSION: Forecasting, Risk, Conservation. Georgian Institute of Water Management and Engineering Ecology, Tbilisi, Georgia.

English language version: 304 pages, ISBN: 0-582-24492-7.
Russian language version (2000): 421 pages, ISBN: 99928-835-1-0.

Tsotne E Mirtskhoulava is Professor, Engineer, Doctor of Technical Sciences and an Academician of both the Russian and Georgian Academies of Science. He is a UN expert on flood control measures and Chairman of the Georgian National Committee of UNESCO 'Man and the Biosphere.' He is the author of over 300 papers, 10 monographs and several standards. This book 'SOIL EROSION: Forecasting, Risk, Conservation' arises from his extensive theoretical, laboratory and field studies. Whilst many publications are available on individual aspects of soil erosion, this book is one of the few that take an integrated approach to the subject. As such, most chapters are case-studies in Georgia, but together they form an integrated resource, which will prove invaluable to students, researchers and academics, along with practitioners in the field of soil erosion forecasting, risk and conservation.

Rugged and steep terrain, along with other factors, such as rather large quantity and intensity of precipitation, the frequent capriciousness of nature, uneconomical and indifferent attitudes to land, which have been prevalent for decades, are the main causes of widespread soil erosion, abrasion, destruction and removal of soil in Georgia by the action of water and wind. Among the countries where soil erosion intensity and complex erosion processes frequently reach catastrophic dimensions, Georgia holds if not the first, at least one of the first, places. It not will be an overstatement to say that Georgia, particularly her mountainous part, is a unique world laboratory for the study of erosion, a conclusion Professor Mirtskhoulava makes in his Book.

The Introduction gives a brief overview of soil erosion forecasting, risk and conservation, whilst a summary at the end sets out future directions and unanswered questions. The Book consists of 305 pages and the main section is split into two parts. Part I 'Soil erosion in Georgia' consists of 11 sections and Part II 'Erosion processes' has five sections. Appendixes are very comprehensive and informative and presented on over 100 pages. Numerical examples are provided to demonstrate the protocols for soil erosion forecasting. The Book will form an excellent and highly recommend resource for soil erosion studies.

As the author is a non-native user of the English language, the perception and interpretation of described studies might be not always be complete for readers which

are native users of English. Nevertheless, it will form an excellent and highly recommend resource for soil erosion studies.

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SOIL EROSION IN EUROPE (2006). EDS. JOHN BOARDMAN (UNIVERSITY OF OXFORD, UK) AND JEAN POESEN (K.U. LEUVEN, BELGIUM). JOHN WILEY, CHICHESTER, 854 PP. ISBN: 13: 978-0-470-85910-0.

Soil Erosion in Europe, published by John Wiley and Sons Ltd. (Chichester, UK) represents a comprehensive compendium of soil erosion/conservation issues, problems, processes, occurrences, public policies and assessments, and control measures as they exist in each European country. This 854 page book in fine print with many Tables, Figures and Photographs, was put together by 143 contributors, representing almost the entire senior scientific soil erosion and conservation expertise of the European continent. This Book is organized into two parts. Part 1 consists of 34 chapters, each presenting a review on a country-by-country basis authored by local experts. For each country (except Latvia and Croatia) the specific erosion and soil conservation issues, problems, data sets, conservation measures and appropriate literature citations are discussed.

Part 2 discusses specific topics on a chapter-by-chapter basis, in which each chapter was prepared by different authors with varied expertise and experience. The Introduction gives a historic, regionally-based perspective concerning past erosion in Europe and the scientific approaches and methods needed to assess past erosion. Subsequent chapters cover traditional soil erosion modes such as sheet and rill, gully and tillage erosion, wind erosion, mass working, piping and crop harvest based soil loss, and erosion process related factors and phenomena, such as surface crusting, soil structural degradation and soil dispersion. The third component of this part discusses erosion risk and selected factor assessments of rain erosivity and soil erodibility at the European scale, soil erosion modelling as practised in Europe, and availability of data sets. The second part of this Book closes with a section concerning off-site impacts and sedimentation, in which issues of sedimentation in water bodies, the effect of runoff agents, especially phosphorus translocation and transformation on eutrophication are discussed. Also the economics of soil erosion vis-à-vis on-farm and off-farm effects, as well as European national policies concerning soil erosion and conservation, are discussed.

Overall, this Book presents a comprehensive view of the scope, severity and diverse nature of soil erosion problems on the European continent, of European expertise and of the technical and different programmes and approaches adopted in the various countries

in addressing these problems. In reading this Book, one is invariably drawn to making a comparison of soil erosion research and conservation work between the North American and European experience. In the USA, soil erosion and conservation research started in earnest in the 1930s, necessitated by the calamitous nature of soil erosion, and following the devastating impact of the Dustbowl. What had occurred in Europe over a period of 2,000 years, took place in the USA in the time span of one century. The US Government took charge and developed a dedicated Civil Service (the 'Soil Conservation Service' (SCS), now the 'Natural Resources Conservation Service (NRCS)) charged with the responsibility to develop management tools and practises at plot, field and watershed scales to address these problems. The experts were mostly agricultural engineers, soil scientists and agronomists. In Europe, erosion and conservation work started about 50 years later, usually initiated by academics, mostly of a geomorphological persuasion, driven by curiosity rather than defined problem-solving objectives. In reading this Book it is interesting to note that soil erosion and conservation research in the USA has significantly declined in recent years with stagnant budgets and the retirement of many experienced and accomplished scientists. However, Europe still has a vibrant research programme, and conservation programmes and policies are still in development. This book is an excellent example of how well resources and scientific expertise were marshalled to forge a coherent and co-ordinated effort of documenting past and ongoing work in soil erosion and conservation in Europe.

An enormous effort was made by the Editors to stay on course with the production of this Book, given the involvement of so many authors with different language skills, backgrounds, experience and priorities. Under the circumstances, this Book is generally well written, and organized, although in places a more consistent and complete representation of maps relative to regions and physiography referenced in the text would have been helpful; especially to readers from beyond the European continent. This Book is a timely and very worthwhile contribution that will provide the reader with a wealth of information about past and present soil erosion research and soil conservation work, about the scientists and engineers involved in these endeavours and about the severity of soil erosion problems in various parts of Europe. It is noteworthy that in cited work little or no reference is made to publications from other than European nations. In doing so, the strictly European emphasis of this book is maintained.

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RECENT PUBLICATIONS BY ESSC MEMBERS

Included are the citation details of papers and books produced by ESSC members. These provide a growing resource for exchange of valuable information to both research and teaching. The cumulative citation list is being added to and updated on the ESSC web site. Students of ESSC members (both undergraduate and postgraduate) are increasingly accessing this facility in their literature searches. Currently, the number of quoted publications cited on the web page is 389. Please e-mail the citation details of papers in international refereed journals since and including the year 2000 to any member of the Editorial team.

As mentioned in the report on recent Ph.D. theses, the citation details of Ph.D. theses by ESSC members since and including 2000 have been added as an additional page to the ESSC web site. To date, 38 Ph.D. theses are quoted. On the ESSC web site, please look under 'Publications.' Please forward the citation details of any additional Ph.D. thesis completed since 2000 by an ESSC member to any of the Editorial team. We will then add the thesis citation details to the web site.

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ESSC SCIENTIST AWARDED THE NOBEL PEACE PRIZE (2007) (PROFESSOR PETER BULLOCK, 1937–2008)

Professor Peter Bullock sat as a member of the 'Intergovernmental Panel on Climate Change' (IPCC), sharing in the award of the 2007 Nobel Peace Prize presented to the Panel. Drawing upon his expertise in characterizing and understanding the impacts of climate change soils and land use, his contribution to the IPCC focused on documenting soil processes in terrestrial ecosystems. In particular, Peter analysed the impacts of changing climates on the processes of land degradation, erosion and desertification: major issues in many arid and semi-arid parts of the world. Peter worked with other colleagues to understand how climate change affects the wide range of 'ecosystem goods and services' that support life on Earth. These include: production of food, fibre and medicines; soil carbon storage; the processing of wastes; water purification; and regulation of flooding and erosion. Peter was keen to show how Soil Science provides a central keystone in understanding the full impacts of climate change.

Peter acted as one of the lead authors in the IPCC 'Second Assessment on Climate Change,' published in 1995, in particular contributing to the sections outlining soil processes in terrestrial ecosystems and detailing the impacts of climate change upon land degradation and desertification. His work recognized the important impacts of changing climates upon levels and patterns of soil moisture worldwide: soil being recognized as a key in understanding impacts upon ecosystem goods and services. One conclusion reached noted how the process of desertification is more likely to be irreversible where environments become drier and soils suffer further degradation through erosion and compaction. The impact climate change exerts on regional soil moisture was observed to be non-linear, leading potentially to large changes in runoff patterns, especially in arid and semi-arid environments. The implications of this were seen to include future uncertainty in regional water supply and in soil productivity for food production, where land degradation can increase the impact of a rising temperature on crop yields. The wider report also concluded how policy instruments aimed to reduce net greenhouse gas emissions were considered easier to implement when designed also to address issues such as soil erosion. Soil issues continue to form a central theme to the most recent IPCC reports, building upon these earlier works.

Sadly, Peter was not able to see the Certificate he received, awarded jointly to all the contributors of the IPCC. If he had, it is probable he would have been content to know that issues of Soil Science were amongst those able to receive the highest recognition.

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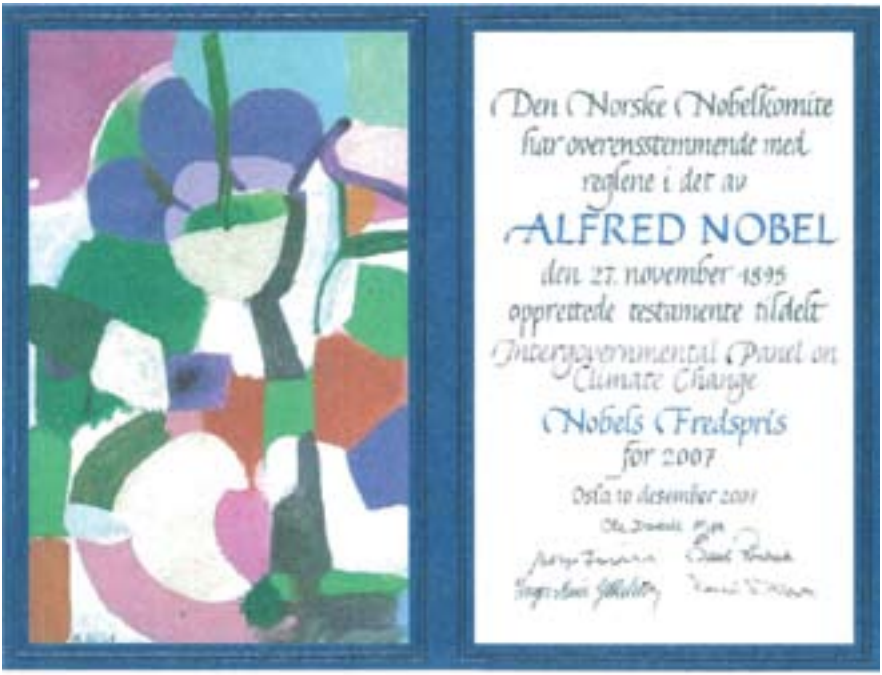

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INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE

UNEP

PRESENTED TO

PETER BULLOCK

FOR CONTRIBUTING TO THE AWARD OF THE

NOBEL PEACE PRIZE

FOR 2007 TO THE IPCC

R. K. Pachauri
IPCC Chairman

R. Christ
IPCC Secretary

Web Based Bulletin Board

The ESSC wishes to rapidly disseminate information to its members. Please forward information to the ESSC web site to be placed on our ESSC Bulletin Board. These could include searches for potential collaborators for research proposals, calls for research proposals, job opportunities, research studentship opportunities, impending conferences and other items of important information for rapid dissemination. Of course, we will also continue the regular circulation of information via our Newsletter. The ESSC web site is:
http://www.essc.sk

Appointment of a new Ph.D. research student

Chris Crosby graduated with a B.Sc (Honours) degree in Geography from the University of Wolverhampton (UK) in 2007. Chris has been appointed as a Ph.D. research student at the University of Wolverhampton. He is investigating the relationship between magnetic methodologies and urban particulate pollution. This will involve an extensive investigation of relationships between the magnetic properties, chemical composition and the particle size distributions of particulate matter in the Wolverhampton area over a 24 month period. The work will then be further expanded, covering several selected towns and cities within the UK. Taking a 'snapshot' of particulate matter properties within the UK may further develop understanding of wider health and respiratory problems associated with roadside pollution and soil contamination. The Director of Studies is Dr Colin Booth. The Second Supervisors are Professor Mike Fullen, Dr David Searle, Dr Jamal Khatib (University of Wolverhampton) and Dr Annie Worsley (Edge Hill University, UK).
E-mail: c.crosby@wlv.ac.uk

ESSC membership list and contact details

The full ESSC membership list is held on the ESSC web site. Under 'members' you can get a full listing. Also under 'members' you can click on any member country and find a listing of members in the selected country.

We are trying to keep the membership list on the web site up-to-date. Please check your details and let us know if there are any necessary correction(s). If your details change, also please let us know. Some members have requested that we do not add their e-mail addresses to the web site, to avoid uninvited 'spam' e-mails. Of course, we respect this request. Therefore, while we retain a list of the e-mail addresses of ESSC Members, this list will not be available on the web site.

Editorial matters in Bratislava are handled by Katarína Kubusová. In terms of membership lists, contact details and the ESSC web site, please send updated information to Agáta at:
E-mail: kubusova@vupu.sk

Please also use and refer to the **'Directory of European Organizations and Persons Working on Soil Protection'** as a reference source for European colleagues, both members and non-members of the ESSC. This publication contains the e-mail addresses of most ESSC members and will be subject to periodic updates. The reference citation is:

Rubio, J.L., Imeson, A.C., Bielek, P., Fullen, M.A., Pascual, J.A., Andreu, V., Recatala, L. and Ano, C. (2006). Directory of European Organizations and Persons Working on Soil Protection. Soil Science and Conservation Research Institute, Bratislava, 190 pp. (plus CD-Rom).

FIRST ANNOUNCEMENTS

Preliminary Announcement

**The Research Institute for Soil and Water Conservation,
the European Society for Soil Conservation and the Czech Society of Soil Science**

**under the auspices of the Czech Ministry of Agriculture
and Ministry of Environment
are organizing the**

International ESSC Conference on

PROTECTION OF THE ECOLOGICAL AND PRODUCTIVITY FUNCTIONS OF SOIL IN A PAN-EUROPEAN CONTEXT

23-25 June 2009, Průhonice (near Prague), Czech Republic.

Conference themes:

- Soil sealing (e.g. brownfield sites, urban development and transport construction).
- Soil degradation (e.g. contamination, erosion, floods and drought).
- Soil reclamation (e.g. drainage, irrigation, improving of the retention ability of agricultural and forest soils).
- Methods of soil monitoring.

Preliminary programme:

Monday 22 June 2009:	Arrival of participants, registration.
Tuesday 23 June 2009:	Registration, opening ceremony, invited presentations, oral presentations and poster sessions.
Wednesday 24 June 2009:	Oral presentations and poster sessions, closing ceremony.
Thursday 25 June 2009:	Field excursion.
Friday 26 June 2009:	Post conference excursion to Prague, departure.

The 1st announcement, with a call for abstracts, is expected during July 2008. (Please visit the ESSC Website: http// www.essc.sk)

In the meantime, all correspondence should be addressed to:
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INTERNATIONAL CONFERENCE ON LAND AND WATER DEGRADATION: PROCESSES AND MANAGEMENT 6–9 September 2009

There is an urgent need to improve our practical and theoretical understanding of land and water degradation processes; in particular the physical, chemical and biological deterioration of soils and water bodies in various regions of the world. This Conference will bridge the gap between land and water and will bring together scientists from various disciplines with different methodological backgrounds.

Topics

- Nutrient dynamics in the land-sediment-water system.
- Function of buffer strips and floodplains for catchment health.
- Physical, chemical and biological processes of soil degradation.
- Methodological approaches to estimate and regionalize non-point source pollution.
- Spatial heterogeneity, variation and prediction of land degradation.
- Methods to review outcomes of mitigation strategies and catchment management.
- Regional studies of land and water degradation, especially in industrialized and urbanized areas, cold climates and Mediterranean regions.

Field trip

The *mid-conference field trip* will focus on land and water management problems in the vicinity of Magdeburg.

The *post-conference field trip* (10-13 September) will introduce general environmental characteristics of the region and will focus on:

- Farm management under changing environmental and socio-economic conditions with visits in a loess region, a low mountain area and the lowlands of north Germany.
- Water and catchment management, with emphasis on mining lakes, mining activities and visits to a low mountain region and a research mine.

Keynote lectures

John Quinton, Lancaster University, United Kingdom.
Rattan Lal, Ohio State University, USA.

Web site: www.ufz.de/comland2009

16th Nitrogen Workshop

University of Turin
University of Milan

CONNECTING DIFFERENT SCALES OF NITROGEN USE IN AGRICULTURE

The 16th Nitrogen Workshop will be held in Turin (Italy), from 28 June–1 July 2009.

The Workshop is jointly organized by the Department of Crop Science of the University of Milan and by the Department of Agronomy, Forest and Land Management of the University of Turin.

Themes to be discussed include:

- Soil biology and the N cycle.
- Physiology of N in plants and soil micro-organisms.
- Gaseous losses.
- Short and long term modelling of N and C.
- N management at the cropping system scale.
- N management at farm and regional scales.
- Assessment of N efficiency and diagnostic tools.
- N management and crop quality.
- Sustainable N use in horticulture, viticulture and tree crops.
- Manure processing for sustainable N management.
- Integrated management of N and other nutrients.
- Education, dissemination and demonstration.

General programme:
Sunday 28 June (afternoon): Registration and Welcome 'Aperitivo.'
Monday 29 June: Workshop sessions.
Tuesday 30 June: Workshop session, field trip and Workshop Dinner.
Wednesday 1 July (morning): Working groups and closing session.

Workshop website: www.nitrogenworkshop2009.org

For further information, please contact us at the e-mail address: info@nitrogenworkshop2009.org

To subscribe the workshop mailing list, please send an empty e-mail to: sympa@liste.unimi.it with Subject: SUBSCRIBE nitrogenworkshop2009

The second announcement, with deadlines and more details, will be distributed before August 2008.

Some Closing Thoughts:

"Never doubt that a small group of thoughtful, committed citizens can change the world. Indeed, it's the only thing that ever has"

(Margaret Mead)

"Imagination is everything. It is the preview to life's coming attractions"

(Albert Einstein)

A story told by a Harvard University professor after teaching his students: "I told them once, they didn't understand; I told them twice, they didn't understand. I told them three times…. and I understood!"

"The deeper that sorrow carves into your being, the more joy you can contain"

(Kahil Gibran, 1926)

"I had rather men ask why no statue has been erected in my honour, than why one has"

(Marcus Porcius Cato, 234-149 BC)

"Waste no opportunity, abandon no one, respect the teachers and care for the student"

(Wayne W. Dyer, 2007)

"Dignity does not consist in possessing honours, but in deserving them"

(Aristotle)

"We are not meant to cower before the darkness of the world; let it cower before us"

(Marianne Williamson, 2003)

AIMS OF THE SOCIETY

The ESSC is an interdisciplinary, non-political association, which is dedicated to investigating and realizing soil conservation in Europe. The ESSC pursues its aims in the scientific, educational and applied sectors by:

Supporting investigations on soil degradation, soil erosion and soil conservation in Europe,

Informing the public about major questions of soil conservation in Europe,

Collaborating with institutions and persons involved in practical conservation work in Europe.

The ESSC aims at co-ordinating the efforts of all parties involved in the above cited subjects: research institutions; teachers and students of geosciences, agriculture and ecology; farmers; agricultural planning and advisory boards; industries and government institutions.

ZWECK DER VEREINIGUNG

Die ESSC ist einer interdisziplinäre, nicht politische Vereinigung. Ihr Ziel ist die Erforschung und Durchführung des Schutzes der Böden in Europa. Die ESSC verfolgt dieses Ziel auf wissenschaftlichem, erzieherischen und angewandtem Gebiet:

durch Unterstützung der Forschung auf den Gebieten der Boden-Degradierung, der Bodenerosion und des Bodenschutzes in Europa,

durch Information der Öffenlichkeit über wichtige Fragen des Bodenschutzes in Europa,

durch Zusammenarbeit mit Institutionen und Personen, die an der Praxis des Bodenschutzes in Europa beteiligt sind.

Die ESSC will alle Personen und Institutionen zusammenführen, die sich für die genannten Ziele einsetzen: Forschungsinstitutionen, Lehrer und Studenten der Geowissenschaften, der Landwirtschaftswissenschaften und der Ökologie, Bauern, landwirtschaftliche Planungs- und Beratungsstellen, Industrieunternehmen und Einrichtungen der öffentlichen Hand.

BUTS DE L'ASSOCIATION

L'ESSC est une association interdisciplinaire et non politique. Le but de l'association est la recherche et les réalisations concernant la conservation du sol en Europe. L'ESSC poursuit cette finalité dans les domaines de la recherche scientifique, de l'éducation et de l'application:

en encourageant la recherche sur la dégradation, l'érosion et la conservation du sol en Europe,

en informant le public des problemes majeurs de la conservation du sol en Europe,

par la collaboration avec des institutions et des personnes impliquées dans la pratique de la conservation du sol en Europe.

L'ESSC souhaite favoriser la collaboration de toutes les personnes et institutions poursuivant les buts définis ci-dessus, en particulier: institutions de recherche, professeurs et étudiants en géosciences, des agriculteurs, des institutions de planification et des conseil agricole, de l'industrie, et des institutions gouvernementales.

OBJECTIVOS DE LA SOCIEDAD

La ESSC es una asociación interdisciplinar, no-politica, dedicada a la investigación y a la realización de acciones orientadas a la conservación del suelo en Europa. La ESSC persigue sus objectivos en los sectores cientificos, educacionales y aplicados, en al ámbito europeo:

promocionando la investigación sobre degradación, erosión y conservación de suelos,

informanto al público sobre los principales aspectos de conservación de suelos,

colaborando con instituciones y personas implicadas en la práctica de la conservación de suelos.

La ESSC aspira a coordinar los esfuerzos, en los temas arriba mencionados, de todas las partes implicadas: centros de investigación, profesores y estudiantes de geo-ciencias, agricultura, selvicultura y ecología, agricultores, servicios de extensión agraria, industrias e instituciones gubernamentales.

Visit the ESSC Website: http://www.essc.sk