



WORLD ASSOCIATION OF SOIL AND WATER CONSERVATION

HOT NEWS

Issue 05, 2016



WASWAC HOT NEWS No. 05, May, 2016

Contents

Welcome to Belgrade to Attend The WASWAC World Conference III in This Coming August	1-2
Announcement of WASWAC Award Nomination (2016)	3-4
WASWAC joined the Soil and Land Network for CCGG	4-6
Report on the 11th National Seminar on Watershed Management Sciences and Engineering of Iran	6-8
Meetings	9-11
Vacancies	12-14
Monthly R-factor and Conversion factors for different time resolutions	15-17
Soil health, less runoff connected	17-19
WASWAC Application Form	20

Cover photo: Soil and Water Conservation Measures in Chaoyang, Liaoning Province, China. The photographer is Mr Ding Fujun.

Editors: Dr. Du Pengfei, Contributors include Prof. Li Rui, Prof. José Luis Rubio, Dr. S.H.R. Sadeghi, Dr. Panos Panagos and Dr Amir Kassam.



IRTCES Building

(Where the Secretariat of WASWAC is located)

The Secretariat of WASWAC

No. 20 Chegongzhuang Road West, Beijing 100048, P. R. China

Tel: +86-10-68786579

Fax: +86-10-68411174

Email: waswac@foxmail.com waswac@163.com

For ISWCR paper submission:

<http://www.journals.elsevier.com/international-soil-and-water-conservation-research/>

WASWAC Website: www.waswac.org



Welcome to Belgrade to Attend The WASWAC World Conference III in This Coming August

WASWAC World Conference III

August 22-26, 2016

Belgrade, Serbia

WASWAC Outstanding

Youth Paper Award 2016 (DATUM)

DEADLINES

- **Full paper submission: May 31, 2016.**
- **Registration fee (Registration fee up to May 31, 2016; after May 31, 2016):**
 - For non WASWAC and ESSC members: 300 EUR; after May: 350 EUR
 - For WASWAC and ESSC members: 200 EUR; after May: 250 EUR
 - For students: 100 EUR; after May: 150 EUR
 - For accompanying persons: 100 EUR; after May: 150 EUR

GLOBAL CONFERENCE TOPICS

- New challenges to soil and water resources in condition of climate change
- Land degradation processes and mechanism
- Soil and water conservation strategies to adapt and mitigate climate change
- Soil and water conservation measures benefits assessment
- Sustainable watershed management
- Social and economic aspects and policies related to soil and water conservation
- Inovations and implemented global/regional/national projects in land conservation
- Education in soil and water conservation

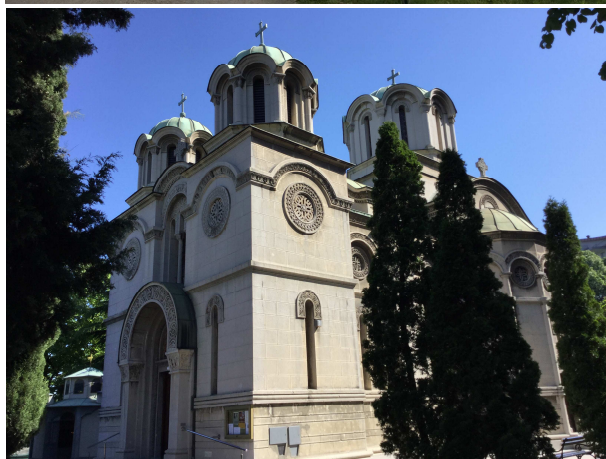
CONTACTS

Dr. Katarina Lazarevic, katarinalazarevic001@gmail.com

Ms. Natalija Momirovic, natalijamomirovic@rocketmail.com

CONFERENCE VENUE

The Conference is planned to be held in in Belgrade, the capital of Serbia,.



Beautiful Belgrade Welcomes You

DETAILS

English Announcement here:

<http://www.waswac.org/newsShow.asp?id=302&fileSort=20>

Chinese Announcement here:

<http://www.waswac.org/newsShow.asp?fileSort=20&id=307#>

WASWAC Outstanding Youth Paper Award Announcement here:

<http://www.waswac.org/newsShow.asp?fileSort=20&id=303>

WASWAC World Conference III official website here:

<http://3rdwaswacconference.sfb.bg.ac.rs/index.html>



Announcement of WASWAC Award Nomination (2016)

According to the BASIC RULES FOR WASWAC AWARDS, the Award Committee (WASWAC AC) issued the Announcement of WASWAC Award (2016) as follows.

1. Awards Types and number of awardees

- (1) Norman Hudson Memorial Award (NHMA), 3 awardees, one each year (2014, 2015 and 2016)
- (2) Distinguished Research Award (DRA), 1 awardee for 2016
- (3) Distinguished Extensionist Award (DEA), 1 awardee for 2016
- (4) Special Contribution Award (SCA), 1 awardee for 2016

2. Procedures

(1) Nomination (the deadline is June 11)

- ✚ Any councilors or region representatives (Vice president) or more than 5 WASWAC members joined can recommend candidate for the awards including Norman Hudson Memorial Award, Distinguished Research Award and Distinguished Extensionist Award.
- ✚ Special Contribution Award is only recommended by WASWAC AC.
- ✚ A formal recommendation letter with handwriting signature and some necessary introduction information are needed to submit to the WASWAC AC or the Secretariat.

(2) Primary Selection

Primary selection will be made by WASWAC AC based on the results of nomination.

(3) Final Evaluation

The primary selected candidates will be submitted to WASWAC Council for voting to reveal the final awardees.

(4) Publicity

The award results will be publicized at the WASWAC Third World Conference, which will be held during August 22-26, 2016, in Belgrade, Serbia. And also, it will be released in the Hot News and the official website of the Association.

WASWAC Award Committee (WASWAC AC)

Recommendation Form of WASWAC Awards (2016)

Award type	year	Recommended Candidate		
		Name	Country	Email address
Norman Hudson Memorial Award (NHMA)	2014			
	2015			
	2016			
Distinguished Research Award(DRA)	2016			
Distinguished Extensionist Award(DEA)	2016			
Referrer name				
Date of submitting				

Notes:

- (1) Only one person can be recommended for each award/year.
- (2) Basic introduction and achievements of recommended candidate are necessary.
- (3) Please return this form and relative documents to waswac@foxmail.com by **June 11, 2016**.

WASWAC joined the Soil and Land Network for CCGG

This Report was provided by Prof. José Luis Rubio, an active councilor of our association.

WASWAC joined the Soil and Land Network for Change and the Campaign Golden Grounds launched by IASS Global Soil Forum and Global Soil Week.

Introducing the Soil and Land Network for Change

The Global Soil Week launches its Soil and Land Network for Change, a project to document the soil and land change-makers resulting in a web-based tool released at the next Global Soil Week 2017 in Berlin.

The promoters consider that making change happen towards a shared vision of sustainable soil



management and responsible land governance requires the concerted effort of many different actors from local to global. To facilitate cooperation amongst these actors, the Global Soil Week is initiating a project to document the network of change-makers in the areas of soil and land- The Soil and Land Network for Change. WASWAC just joined the Network which already includes various kind of partners such as initiatives and organizations from civil society, academic, government, NGOs, cultural, religious, youth,...Some of the ones already included in the Network are: Land Right Now, 4 Pour 1000, People 4 Soil, European Society for Soil Conservation-ESSC, Focus on Land Africa, Global Citizen, Global Soil Partnership, La Via Campesina, World Centre for Sustainable Development, UN Sustainable Development Goals,... and many others. The objective is to create a strong global community for change. These changes aims to “Social Justice and Climate Change Action” between others important topics such as: Soil Biodiversity and health: Why do we need a living soil?; Soil and Climate Change Mitigation: How can we put carbon back in the earth? Land Distribution: How to fight poverty, hunger and inequality? Global Goals: What does inclusive development look like?; Sustainable land Management: Healthy soils for a people and planet; Soil Fertility: How can we keep the soil healthy?.....

The web site: <http://globalsoilweek.org/golden-grounds> provides you more information, including expanded insight on the mentioned topics. In each of them you will find concise information on the subject together with references for to know more

The link also includes access to the IASS Vimeo Chanel to see the video on “Better Save the Soil” with arguments considering that “both political initiatives and local actions are necessary to secure the access to food and livelihoods for everyone. Measures for sustainable agriculture are already at hand, but they are often not applied – both on a small and large scale. And even if most of us live in cities, we all can do our part in saving soils all over the world”.

The link also provide access to the animated film on “Let’s Talk About Soil” which tells the reality of soil resources around the world, covering the issues of degradation, urbanization, land grabbing and overexploitation; the film offers options to make the way we manage our soils more sustainable.

Introducing the Golden Grounds campaign

The Earth Day, April 22, 2016, was the opportunity providing momentum for awareness-raising on global challenges to the sustainable development of our societies and the planet.

On this occasion and in the forefront of the upcoming Global Soil Week in spring 2017, the IASS Global

Soil Forum launched a web based campaign Golden Grounds, to make global challenges transparent to a wider audience and to present soil and land related strategies for social justice and climate change action.

Golden Grounds is about the earth under each of our feet, upon which all of us depend. Our soils which are our communal life-support system, a common good for humanity, are under immense pressure to produce an increasing amount of food, energy, and raw materials. Soil degradation continues unabated in many countries, resulting in devastating losses of biodiversity and threatening the provision of ecosystem services such as soil fertility for food production, groundwater recharge or carbon sequestration. We need to protect the living soil from rapid and continuous large scale degradation going on all over the world. These soil resources are unequally distributed while growing consumer demand fires competition for fertile land. Secure land tenure as well as a pro-poor approach to land rehabilitation are strategies to realize the recently negotiated Global Goals.

This public awareness campaign contains:

- ✚ a new single and music video “Golden Grounds”
- ✚ animated Infographics on soil and land strategies for social justice and climate change action
- ✚ available for free download on the campaign page: www.globalsoilweek.org/golden-grounds

Also you can use a Social Media Toolkit to spread the word in your communities.

Please find details here: <http://www.waswac.org/newsShow.asp?fileSort=19&id=316>

Report on the 11th National Seminar on Watershed Management Sciences and Engineering of Iran

This Report was provided by Dr. S.H.R. Sadeghi, the president of The Watershed management Society of Iran,
which is one of Organization Members of WASWAC.

An important purpose of each country is protecting of soil and water resources. Iran, due to being located in arid and semi-arid belt, in view point of watershed management, soil and water resources requires special considerations. Problems such as loss of biodiversity, frequent floods and droughts, pollution of fresh water, desertification and the occurrence of dust storms are often the result of complex processes requiring systematic approach or solution. It can be materialized by the

comprehensive management of the watersheds connecting communities and resources managers around the world.

In the last decades it seems multi-sectorial approach and inter-sectorial coordination has been implemented. Now we need the financial and management development programs under a single union (Single Window System) to be placed. In this regard, Yasouj University and the Watershed Management Society of Iran organized the 11th National Seminar on Watershed Management Sciences and Engineering of Iran with a focus on Participatory Development in Watershed Management during April 19 and 21, 2016. Some 350 managers, policy makers, students, researchers and professors had participated. From 150 papers which submitted to the Seminar, 13 papers were accepted for oral presentation and 122 papers were accepted for poster presentation. In this Seminar, two workshops with subject of Participatory Development in Watershed Management and A Challenge on the National Mega Project on the Integrated Watershed Management were held. At the end of the Seminar the special meeting was also held regarding solutions for issues of Zagrosian Forest. In addition, many traditional exhibitions were simultaneously were held by local peoples. We hope it was useful for all.

A Few Pictures from Seminar Programs



Prof. Seyed Hamidreza Sadeghi

President of the Watershed management Society of Iran and Professor of Tarbiat Modares University



A view of seminar hall and contributors



Good Luck

COMING MEETINGS

Sustainable Soil Management: Soil for life

About this course

Soil is the earth's fragile skin that anchors all life. We depend on soil to build our homes and cities, to grow crops for food and raise livestock, to support transportation and enable recreation. Yet we disregard this crucial and precious resource that lies right under our feet.

This introductory environmental studies course will explore the importance of soil to life on earth, the issues, processes and societal challenges underlying soil degradation – and what can be done to ensure sustainable soil management for the future. The threats to our soil span deforestation, erosion, overgrazing, use of agrochemicals, pollution and climate change. Learn what you can do to make a difference in protecting this vital natural resource.

Length: 12 weeks

Institution: WageningenX

Effort: 7-9 hours per module

Subject: Environmental Studies

Price: FREE

Level: Introductory

Add a Verified Certificate for \$49

Languages: English

What you'll learn

- ✚ Why soils and sustainable soil management are so important to life on earth
- ✚ How soils form, their functions and basics of soil degradation
- ✚ Threats to and caring for: Soil water relations, soil fertility and soil biodiversity
- ✚ Effects of and solutions for: Soil erosion, soil pollution and soil salinization
- ✚ Socio-economic and policy aspects of sustainable soil management
- ✚ How you can help protect this critical natural resource

Video Transcripts: English

REGISTRATION HERE:

<https://www.edx.org/course/sustainable-soil-management-soil-life-wageningenx-soilx#!>

International Scientific Conference Conservation Soils and Water



GENERAL INFORMATION

THE VENUE

Registration, opening, plenary and sectional sessions: [Hotel ATLANTIS Resort&Spa](#).

ACCOMODATION

[Hotel ATLANTIS Resort&Spa](#), Burgas, neighborhood Sarafovo, Angel Dimitrov 58 Str.

If arriving by car you may use the GPS coordinates of the hotel:

N 43° 5629742 E 28° 5293967

TIME TABLE

31.08.2016 (Wednesday) 16.00 - 20.00 Registration of the participants.

01.09.2016 (Thursday) 08.00 - 10.00 Registration of the participants.

Opening ceremony 10:00. Plenary session. Section sessions. Poster session. "Welcome" cocktail.

02.09.2016 (Friday) 09:00 Section sessions. Poster session. Closing of the Conference.

03.09.2016 (Saturday) Departure of the participants

PUBLIC TRANSPORT

From the airport Burgas to the [Hotel ATLANTIS Resort&Spa](#): The bus stop is in front of the airport. You need bus №15 (get off at the stop 4th stop - last stop). After 250 meters is the hotel.

From the bus station „South” and the railway station to the **Hotel ATLANTIS Resort&Spa**: The bus stop is in front of the stations. You need bus №15 (get off at the last stop).

REGISTRATION

In the conference blok of the [Hotel ATLANTIS Resort&Spa](#), **31.08.2016** from **16.00** to **20.00** and **01.09.2016** from **08.00** to **10.00**.

DEADLINES

Sending the Abstract together with the Author's Response Application Form "A" or online registration should be made	31.05.2016
Confirmation of the abstract(paper) approval	15.06.2016
Sending the full text of the paper, Form B or online registration and payments should be made	31.07.2015
Payment of the Conference fees	31.07.2016
Announcement of the program on our web page www.conserving-soils.eu	15.08.2016
Posters should be send up to	15.08.2016
Registration of the participants 16:00 - 20:00 08:00 - 10:00	31.08.2016 01.09.2016
Opening of the Conference at 10:00	01.09.2016

CONTACTS

Scientific Technical Union of Mechanical Engineering

Sofia 1000, 108, Rakovski St., floor 4, room 411

Phone: (+359 2) 987 72 90, (+359 2) 986 22 40;

Fax: (+ 359 2) 986 22 40,

Mobile: + 359 888 003582,

e-mail: office@conserving-soils.eu;

<http://www.conserving-soils.eu>

www.mech-ing.com

Erosion modelling workshop



Venue: Ispra , Italy

Date: 20-22 March 2017

Objective: This workshop will discuss mainly issues how the local/regional modeling results can be upscaled (or applied) at European scale. The workshop serves also as a follow-up of recent JRC modelling developments and published maps for soil erosion by water and wind. The workshop will try to focus on how various project or local/regional modelling applications can improve the “know-how” at European scale. Emphasis will also be given to management practices that can reduce soil erosion. The organisers also invite pan-European projects (e.g RECARE) to show the best management practices to reduce erosion and to demonstrate their research work in study sites.

Travel information: Ispra is well served through 2 airports close to Milan. We recommend you to arrive in Malpensa airport which is around 20Km from Ispra while Linate airport is around 90 Km from Ispra.

Transfer from/to the airport will be organized by JRC

Travel support: Limited number of young scientists (or Post Docs) will receive financial support for travel expenses.

Accommodation: There are plenty of hotels close to Ispra. A group booking will reserve hotels in Angera, Ispra and surroundings.

Fees: No Registration fees are applied

Registration: Will be open in summer/early autumn

Next steps: if you want to apply for travel support or if you want to present/discuss your research findings, please contact Panos Panagos. A newsletter in summer (and current page updates) will further inform you about the developments

Details here: <http://esdac.jrc.ec.europa.eu/themes/erosion-modelling-workshop>



VACANCIES

1. Assistant Professor Soil Fertility Extension Specialist



The Department of Crop and Soil Science at Oregon State University invites applications for a tenure-track, assistant professor Extension specialist position focused on soil fertility management. This is a 9-month, full-time position with a 60 % Extension and 40% Related Research and other assigned duties split.

Responsibilities: The successful candidate is expected to develop a nationally recognized, externally funded program that will include innovative Extension methods and applied research of specific need and clientele interest in management of soil fertility for Oregon cropping systems. This position primarily addresses soil fertility by conducting applied research and developing nutrient management recommendations to improve nutrient use efficiency by crops. The faculty member may also address soil fertility management with regard to cropping system management recommendations (e.g. tillage systems, crop rotations and advances in plant breeding, irrigation, drainage). The goal of this position is to assist OSU Extension faculty and industry clientele in the development and implementation of fertilizer practices such as nutrient rate, timing, and source, or method of application that improves nutrient use efficiency and reduces nutrient losses. The faculty member is expected to be a leader on soil fertility issues and research and will work with and support Extension and research faculty located across Oregon. The appointee will be expected to participate actively in graduate education, publish research findings in peer-reviewed journals, and transfer information to industry audiences through Extension publications and presentations at grower meetings and field days.

Qualifications: Applicants must have a Ph.D. in Soil Science, Agronomy or closely related field, with demonstrated experience in soil fertility management.

Application: Position and application details available at: <http://oregonstate.edu/jobs> . Posting # PO0312UF.

To ensure full consideration, submit your application **by June 30th, 2016.**

For questions related to the position, contact Search Committee Chair, Associate Prof. Andrew G. Hulting, at:

andrew.hulting@oregonstate.edu or 541-737-5098.

Oregon State University (OSU) is an Affirmative Action/Equal Opportunity employer and commits to inclusive excellence by advancing equity and diversity in all activities. OSU particularly encourages applications from members of historically underrepresented racial/ethnic groups, women, individuals with disabilities, veterans, LGBTQ community members, and others who demonstrate the ability to help achieve the vision of a diverse and inclusive community. OSU has a practice of being responsive to the needs of dual-career couples.

Details at: <http://www.earthworks-jobs.com/soil/osu16051.html>

2. PhD position on the Geomorphology and Radiometric Dating of Duricrusts



This project is searching for one doctoral student in a research project, based at Department of Earth Sciences in Stellenbosch, South Africa. It is part of the multi-disciplinary research project "Exploiting the Genomic Record of Living Biota to Reconstruct the Landscape Evolution of South Central Africa". It is funded by the Volkswagen Foundation and conducted in close collaboration with biologists and geologists from Bavarian Zoological Museum, Munich (Staatliche Naturwissenschaftliche Sammlungen Bayerns) and the Helmholtz Centre Potsdam - GFZ German Research Centre for Geosciences. This interdisciplinary project is integrating standard geomorphological approaches, and cutting-edge geochronological methods, with phylogeography and phylogenomics to reconstruct finer-scale details of landscape evolution. Surface exposure dates of selected landforms will be integrated with DNA sequence data of extant populations of fishes to quantify timings of evolutionary events in the evolution of rivers and their biodiversity. Focused on Late Cenozoic landscape evolution in central Africa, the study aims to resolve the phylogenetic relationships of four major groups of fishes in direct relation to tectonically induced events in the drainage evolution of central Africa (northern Zambia and south-eastern Katanga, Democratic Republic of Congo).

Main tasks:

The doctoral student at Stellenbosch University will characterize ferricrete duricrusts using laboratory



methods (physical and chemical methods of mineral separation and characterization) and remote sensing methods (Landsat, ASTER, SRTM). In the main, research activities will entail regional mapping with direct sampling of duricrust exposures, and their physical and chemical mineral separation, with QEMSCAN analyses. This project will interface closely with an allied radiometric dating in a collaborating laboratory. The main objective is to estimate ages of emplacement of principal plateaux, which will be integrated independent dating, using cosmogenic methods, of knickpoint ages along selected rivers. Fieldwork will be an important component of the project, which will otherwise mainly be conducted at the Earth Sciences department and in collaboration with Department of Environmental and Geographical Sciences, University of Cape Town. A background in tropical duricrusts would be advantageous.

Starting date: 1st August 2016 (earliest)

Fixed term: 3 years

Support: Competitive Doctoral Scholarship

Qualification requirements

Applicants are required to have their first degree in the earth sciences. A background in geochemistry, tropical geomorphology, mineralogy and remote sensing is desirable. Postgraduate level facility with English is required. The candidate must have, or soon receive, a MSc-degree that permits entrance to a PhD program, and must not have a PhD or more than 4 years research experience after receiving the MSc degree.

How to apply

Applications must include: i) your CV (and if you have any publications, please include them), ii) names and contact information for 3 references, iii) a copy of your list of courses and grades from bachelor and masters; a copy is sufficient; an official translation is not necessary at this stage, iv) a half page about your research interests, and your strength, v) a half page (maximum) statement explaining why you would like to join us and what you have to offer the project.

Further information on this position

For further information, please contact Dr Fenton Cotterill (sb16051@earthworks-jobs.com) or Prof Dirk Bellstedt (sb16052@earthworks-jobs.com).

Details at: <http://www.earthworks-jobs.com/geoscience/stellen16051.html>

Rainfall Erosivity in Europe

What is rainfall erosivity (R-Factor)?

Rainfall erosivity is the kinetic energy of raindrop's impact and the rate of associated runoff. The R-factor is a multi-annual average index that measures rainfall's kinetic energy and intensity to describe the effect of rainfall on sheet and rill erosion. Among the factors used within RUSLE and its earlier version, the Universal Soil Loss Equation (USLE), rainfall erosivity is of high importance as precipitation is the driving force of erosion and has a direct impact on the detachment of soil particles, the breakdown of aggregates and the transport of eroded particles via runoff. A precise assessment of rainfall erosivity requires recordings of precipitation at short time intervals (1 – 60 minutes) for a period of at least several years. The rainfall erosivity is calculated by multiplying the kinetic energy by the maximum rainfall intensity during a period of 30-minutes for each rainstorm. The R-factor accumulates the rainfall erosivity of individual rainstorm events and averages this value over multiple years.

REDES: Rainfall Erosivity Database on the European Scale

The Rainfall Erosivity Database on the European Scale (REDES) includes high temporal resolution precipitation data and the calculated R-factor from 1,541 precipitation stations within the European Union (EU) and Switzerland. The Rainfall Erosivity Database on European Scale (REDES) of precipitation stations is the result of calculating the R-factor for a total of 26,394 years with a mean value of 17.1 years per station. The data collection exercise of high temporal resolution data began in March 2013 and was concluded in May 2014. For the present rainfall erosivity data collection exercise, a participatory approach has been followed in order to collect data from all Member States (Acknowledgments). The precipitation data collected from the 28 countries across Europe have different temporal resolutions: 60-min, 30-min, 15-min, 10-min and 5-min. In order to homogenise the R-factor results calculated using different time-step data, conversion factors were established to have the data at the 30-min temporal resolution (reference).

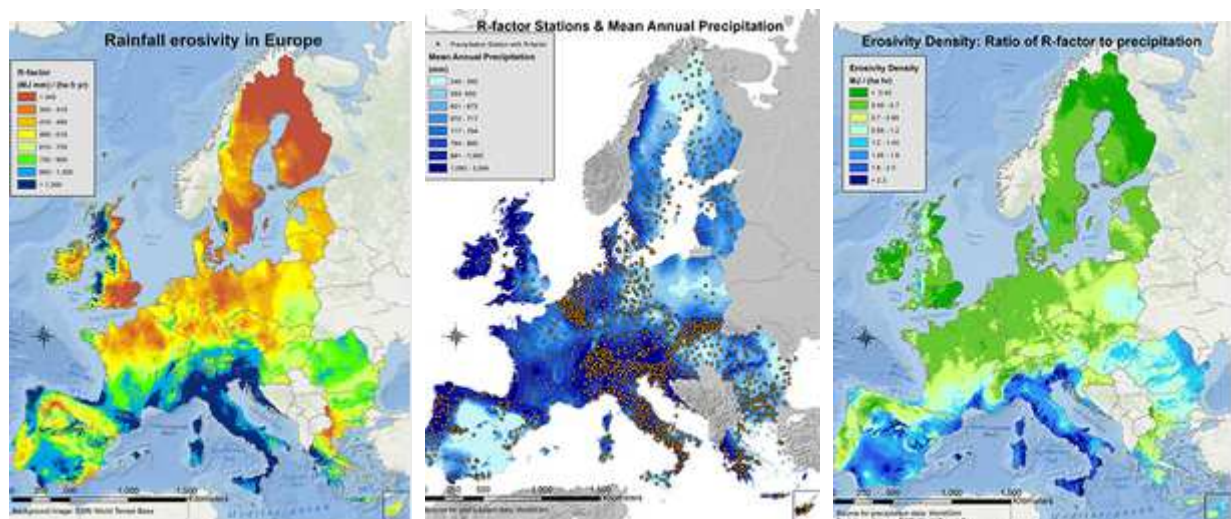
R-factor in Europe

The purpose of this study is to assess rainfall erosivity in Europe in the form of the RUSLE R-factor, based on the best available datasets in Europe. We used the Rainfall Erosivity Database on the European Scale (REDES) which contains 1,541 precipitation stations in all European Union (EU) Member States and Switzerland, with temporal resolutions of 5 to 60 minutes. The R-factor values calculated from precipitation data of different temporal resolutions were normalised to R-factor values with temporal resolutions of 30 minutes using

linear regression functions. Precipitation time series ranged from a minimum of 5 years to maximum of 40 years. The average time series per precipitation station is around 17.1 years, the most datasets including the first decade of the 21st century. Gaussian Process Regression(GPR) has been used to interpolate the R-factor station values to a European rainfall erosivity map at 1 km resolution. The covariates used for the R-factor interpolation were climatic data (total precipitation, seasonal precipitation, precipitation of driest/wettest months, average temperature), elevation and latitude/longitude. The mean R-factor for the EU plus Switzerland is 722 MJ mm ha⁻¹ h⁻¹ yr⁻¹, with the highest values (>1,000 MJ mm ha⁻¹ h⁻¹ yr⁻¹) in the Mediterranean and alpine regions and the lowest (Less than 500 MJ mm ha⁻¹ h⁻¹ yr⁻¹) in the Nordic countries. The erosivity density (erosivity normalised to annual precipitation amounts) was also highest in Mediterranean regions which implies high risk for erosive events and floods.

Rainfall erosivity (R-factor) in Europe is a key parameter for estimating soil erosion loss and soil erosion risk, but the use of this dataset can be widely extended to other applications: landslide risk assessment, flood risk forecasting, Hydrology, post-fire conservation measures, agricultural management and design of crop rotation scenarios.

Information: Panos Panagos, Pasquale Borrelli, Katrin Meusburger* European Commission, Institute of Environment and Sustainability, Land Resource Management Unit AND *Institute of Environmental Geosciences, University of Basel



Data and Maps

The Rainfall Erosivity and the other climatic data is in Raster format. The public user can download Datasets

a) Rainfall erosivity in Europe (R-factor) b) Erosivity Density c) The standard error of the estimates d) The

R-factor in Switzerland (as calculated in 2012) and the code for calculating R-factor. To get access to the data and the code, please compile the online form; instructions will then follow how to download the datasets.

Details at: <http://esdac.jrc.ec.europa.eu/themes/rainfall-erosivity-europe>

Soil health, less runoff connected



ELLSWORTH, Iowa – Addressing soil health and changing a few land-management practices can often have a substantial impact on reducing nutrient runoff from fields. Upper Midwest farmers are being asked to significantly reduce the amount of nitrogen and phosphorus runoff from their fields. Some experts say the solution isn't really all that complicated.

“Soil health and nutrient loss are very closely connected,” said Jim Friedericks, AgSource Laboratories’ outreach and education advisor. “If you’re managing for one, you’re basically managing the other. By improving soil health you will also reduce nutrient losses. The benefits of nutrient-loss-reduction practices extend to helping improve overall soil health.”

The Iowa Nutrient Reduction Strategy exists to assess and reduce nutrient runoff to Iowa waters and ultimately the



Gulf of Mexico. There is a dead zone in the Gulf of Mexico consisting of thousands of square miles where oxygen levels are too low to support marine life. Each of the 12 states along the Mississippi River is developing its own nutrient-reduction strategy. Agricultural land use accounts for most of the nutrient runoff into watersheds. According to the Iowa Nutrient Reduction Strategy, requirements for Iowa's farmland are reductions of 41 percent for nitrogen and 29 percent for phosphorus losses.

"If we are to reach our overall reduction goal of 45 percent less total nitrogen and total phosphorus loss, we need to focus on best practices for applying fertilizer, reducing tillage and additional use of cover crops," Friedericks said.

He said the combination of reducing tillage and increasing cover cropping will achieve most of the required reductions being asked of farmers. Those two practices also have the biggest impact on soil health, he said.

Soil health is all about microbes. The growth of the microbial life in soil is regulated by the balance between nitrogen and carbon. Microbes use nitrogen when there is an excess of available carbon, and release nitrogen when carbon is limiting. This released nitrogen can leave the field as a gas or as nitrate leaching to ground water or in tile drainage. Carbon in this balance comes from decomposing plant residues and actively growing plant roots. Nitrogen inputs are applied as fertilizer or through biological nitrogen fixation and recycling. Adding biomass through cover cropping causes a boost in carbon from plant roots or residue. The boost stimulates microbial growth and in turn retains nitrogen in the system.

Reducing tillage or practicing no-till works to slow down the rate of carbon use in the soil, resulting in an accumulation of more stable forms of organic matter as plant residues decompose over a longer period. Increasing organic matter improves the physical characteristics of soil such as aeration, water infiltration and water supply while reducing erosion and runoff.

"It is this microbial life that is central to the concept of soil health and that plays a significant part in the ability of the soil to retain nutrients," Friedericks said. "As a living component of the soil, it's something that can be managed or enhanced, along with other factors, for maximum benefit."

Phosphorus added to the soil as fertilizer, or mineralized from crop residue, is mostly bound to mineral soil particles; only about 25 percent is available for crop uptake. That means high phosphorus levels in surface water comes from soil eroded from fields and carried along with sediment in water. Controlling erosion through reduced tillage, cover cropping, or with terraces and buffer strips saves topsoil and controls loss of phosphorus from farm fields.

Managing fertilizer rates and timing along the "4R principles" – applying the "right" fertilizer source at the "right" rate at the "right" time and in the "right" place — has the potential of reducing nutrient losses. Phosphorus

applied at the right amount, as indicated by soil testing, or using liquid manure can cut losses by as much as 46 percent.

Other practices suggested under Iowa's reduction strategy also have impact. Extended rotations and converting cropland to pasture or set-aside land, such as in the Conservation Reserve Program, can achieve a 75 percent to 85 percent reduction of phosphorus and nitrogen losses, respectively. This too will impact soil health because the land is tilled less often, the soil surface is protected from erosion and the plants growing on the soil for more days in a year will maintain larger microbial populations in the soil, Friedericks said.

He suggests testing soil to determine the appropriate amount of fertilizer to apply. Consider fertilizer timing and tillage operations that will protect soil and nutrients, making them available to the crop when required. Evaluate the condition of the soil to see if adding a cover crop or changing a rotation might enhance the quality of this all-important resource.

AgSource is in the business of agricultural and environmental laboratory analysis and information-management services. It is a subsidiary of Cooperative Resources International. Visit www.AgSource.com to view technical bulletins about nitrogen and phosphorus and for more information. Available at:

http://www.agrview.com/briefs/crop/soil-health-less-runoff-connected/article_df019c2c-e79e-5baf-90fd-0d5ea39ca080.html





WASWAC MEMBERSHIP APPLICATION/RENEWAL FORM (Issued 120501)

(For applicants from all countries)

Name: (Ms./Mrs./Mr./Prof./Dr.) Gender: ☐F ☐M
Institution:
Postal address:
State/Province: Zip/Postal code: Country:
Phone: Fax:
Emails (Please give at least 2 addresses to ensure uninterrupted contact): (1)
(2) (3)
My specialized field(s):
Please sign me up for the WASWAC membership in category*: ☐1(IM)☐2(LM)☐3(OM)☐4(SM&GM)
Membership for the year(s) @US\$ = US\$
Donation for developing country membership, etc. US\$
Donation to the Moldenhauer Fund US\$
Total US\$

***Membership categories & rates** from July 18, 2005, amended March 3, 2007 and March 4, 2010.

1. IM (Individual membership): US\$20 for 5 years for developing countries (In China, members pay 130 yuan RMB); US\$40 for 5 years for developed countries and persons working in international organizations worldwide.
2. LM (Life membership): US\$80 for developing countries (In China, members pay 520 yuan RMB); US\$160 for developed countries and persons working in international organizations worldwide. Persons who have passed their 60th birthday pay only half of these LM rates.
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Name of Receiver (A/C Holder's Name): World Association of Soil and Water Conservation

Bank Name and Address: China Construction Bank, Shoutinanlu Branch, Beijing, China, No. 9 Shoutinanlu Street, Haidian District, Beijing, P R China

A/C NO.: 1100 1042 7000 5301 6996

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