



**WORLD ASSOCIATION OF SOIL AND WATER CONSERVATION**

# **HOT NEWS**

Issue 07, 2018



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## WASWAC HOT NEWS No. 07, July, 2018

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**(Special Issue for the second International Youth Forum of Soil and Water Conservation)**

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Editors: Dr Du Pengfei, Contributors include all participants of the second IYFSWC.

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

WASWAC Website: [www.waswac.org](http://www.waswac.org)

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## **The Second International Youth Forum of Soil and Water Conservation Was Held Successfully in Moscow**

The second International Youth Forum of Soil and Water Conservation (2<sup>nd</sup> IYFSWC) with the title of “Climate Change Impacts on Sediment Dynamics: Measurement, Modelling and Management” was held in beautiful Moscow successfully during August 26-31.



A corner of conference

This forum was sponsored by WASWAC, and organized by the Lomonosov Moscow State University (MSU). It is the second session following the first session held in Nanchang in October 2015. It is worldwide forum focuses on the youth who are contributed in the soil and water conservation. Totally 137 participants from 14 countries including China, Iran, Morocco, Russia, Austria, Egypt, Italy, Nigeria, Serbia, Belgium, Germany, Japan, Poland and Ukraine have attended this forum.

Erosion, sediment delivery and sediment transport are natural geological processes that influence the form and function of terrestrial and aquatic systems. These processes are central to landscape and soil development, geochemical cycling, material fluxes and river channel morphology across the globe. In addition, they strongly influence water quality and ecosystems of the world's rivers and oceans. A wide range of natural (i.e. wildfire) and anthropogenic (harvesting, agriculture, urbanization) disturbances alter the rates and magnitudes of erosion and related sediment dynamics which can have significant economic and social implications. While several important changes to the earth's surface have resulted from socio-economic (i.e. population growth, Land change, resource extraction) factors, there is increasing concern for the potential importance of climate change as a driver of future changes in erosion and sediment dynamics and the wide ranging impacts thereof. This forum specifically addresses the issue of climate change and its impact on erosion and sediment dynamics with special emphasis on its implications for measurement, modelling and management of sediment in a changing world.

Dr Sergey Chalov, the deputy dean for international affairs of Faculty of Geography in MSU was hosted the opening ceremony and gave a warm welcome for all participants.



Addressing on the Opening Ceremony



Prof. Li Rui, the president of WASWAC, Prof. Ning Duihu, the Secretary-general of WASWAC, Prof. Sergey Dobrolyubov, the dean of Faculty of Geography in MSU, and the corresponding member of RAS, Prof. Nikolay Kasimov, the president of Faculty of Geography in MSU, and the Academician of RAS, Prof. Kazimierz Banasik, the vice-president of ICCE, and Prof. Paolo Porto, the ICCE Secretary, attended this opening ceremony and gave speeches.



The Opening Ceremony

In President Li Rui's speech, a brief introduction on the forum was provided, a heartfelt welcome was delivered, an earnest expectation for the young generation was expressed, and a good wish for the forum was given.



President Li Rui is giving a speech in the Opening Ceremony

During the forum, 6 outstanding scholars provided all participants a very high-level academic keynote presentation. The 6 keynote speakers are:

1. Prof. Jean Poesen, from the division of Geography and Tourism within the Department of Earth and Environmental Sciences, KU Leuven, Belgium;
2. Dr Peter Strauss, the head of the institute for Land and Water Management Research within the Federal Agency for Water Management.
3. Prof. Helmut Habersack, the UNESCO Chair on *Integrated River Research and Management*, from Hydraulic Engineering and Modelling at the Department of Water, Atmosphere and Environment at the University of Natural Resources and Life Science, Vienna, Austria.
4. Prof. Valentin Golosov, from Laboratory of Soil Erosion and Fluvial Process,

Faculty of Geography in MSU.

5. Prof. Lei Tingwu, from the China Agricultural University, one of the Editor-in-Chief for WASWAC official journal - *International Soil and Water Conservation Research*.
6. Prof. Miodrag Zlatic, the former president of WASWAC, and a full professor at Faculty of Forestry, Belgrade University, Serbia.

Detailed information please see the following introduction.



Prof. Jean Poesen, one of the Invited Speakers, is giving speech

For the young participants, to provide a full platform for them to communicate, to express, and to discuss what researches they have been involved, up to 74 oral presentations and 57 poster presentations have been arranged in 5 oral rooms and 1



exhibition hall during this forum. All participants got the chance to share their research with others.



Some Oral Presentations



Some Poster Demonstrations

To make all participants clear about the achievement in soil erosion control and water resources protection, the scientific tour was arranged on August 30. This tour including two sites visiting.

The first one is a different types of soil erosion (sheet, rill, ephemeral gully etc.)



observation in the cultivated lands in this part of the Central Russia. Erosion processes are observed during spring snow-melting in the end of March – beginning of April and after heavy rain-storms during warm part of year (May – September). Results of long-term monitoring of soil erosion, quantitative assessment of the soil erosion rates and consequences of the cultivated land reduction have been discussed during the field excursion.



The soil erosion observation visit

The second one is the Moscow water supply system. A canal constructed almost 80 years ago for Moskva-Volga has now become the biggest artificial waterway in Russia, linking Moscow to the Volga River at Ivankovo, north of Moscow. Participants have learned a lot about the water supply system and the protection for the water sources locations.



The water supply system visit

As an extra welfare, a training course “Water-related natural hazards: measurement and modeling” has been provided during this forum. It included 7-session lectures, seminars, as well as workshops. The topics are mainly about the following aspects:

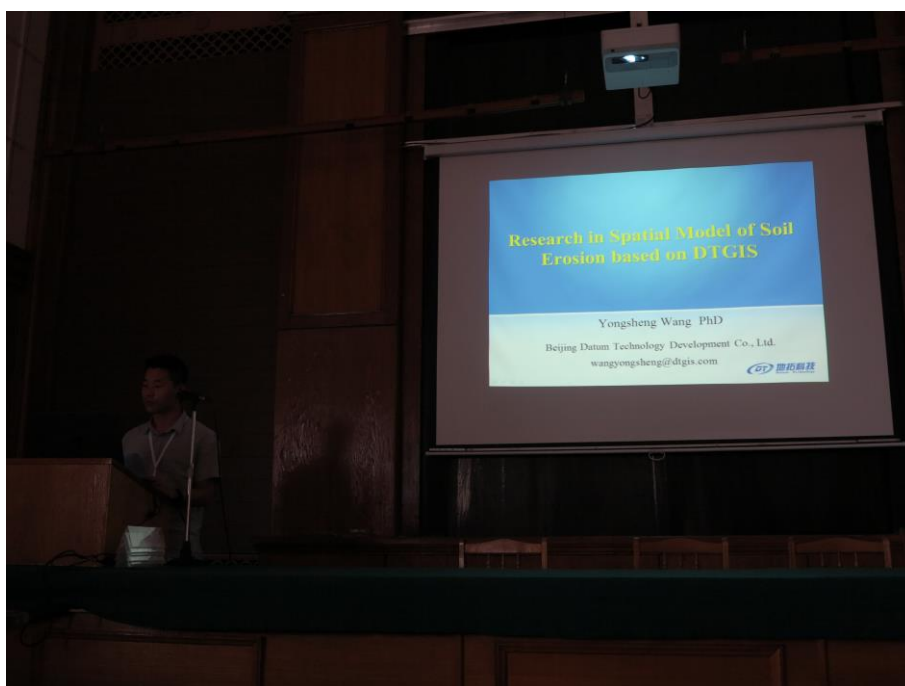
1. How can we measure erosion at plot scale, field scale and small watershed scale, what are the challenges for these different scales of measurement and which types of equipment exist
2. Ecomag: catchment scale streamflow assessment for world’s large rivers
3. Soils of the world
4. Digital modeling of erosion soil cover patterns
5. Quantitative assessment of soil and gully erosion rates
6. Social economical factors of soil and water conservation in the different landscape zones
7. Bed load measurements techniques in river monitoring

Participants for this course has got the official internationally recognized diploma of Moscow State University (1 ECTS point), which was issued in the closing ceremony of the forum.



The diploma issue for the training courses

As one of the important content, the WASWAC outstanding Youth Paper Award was released in the closing ceremony. Total 10 paper were evaluated from submitted manuscripts to receive this award. Each first author for the ten papers has received 1000 USD honorarium and certificate. As the sponsor of this award, Beijing DATUM Technology Development CO.,LTD has dispatched staffs to attend this forum. The award issue ceremony was tightly following the introduction proposed by DATUM.

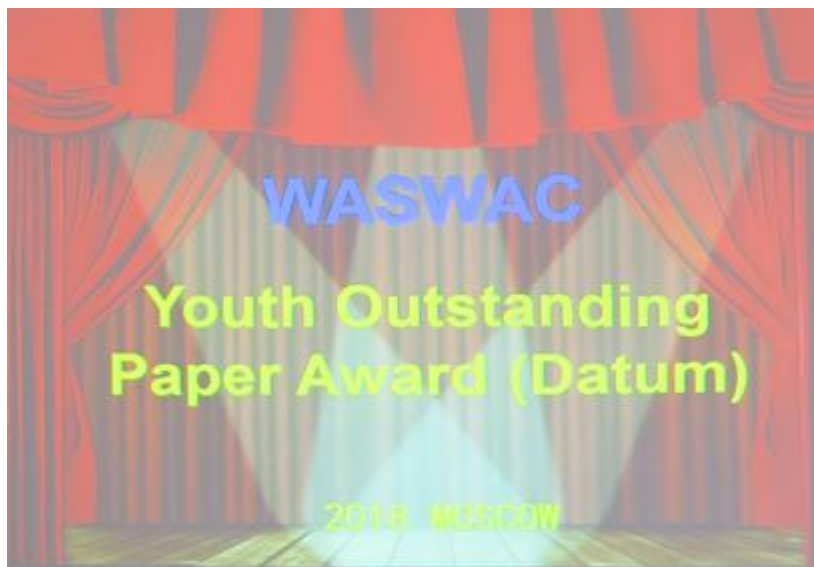


An introduction proposed by DATUM in the closing ceremony

The sponsors for this forum include WASWAC and MSU. The Co-organizers include China Society of Soil and Water Conservation (CSSWC), International Research and Training Center on Erosion and Sedimentation (IRTCES), The International Commission on Continental Erosion (ICCE), The International Association of Hydrological Sciences (IAHS), V.V. Dokuchaev Soil Science Institute, and the UNESCO Chair at the University of Natural Resources and Life Sciences. Thanks for the everything under their strong support!



## **WASWAC outstanding Youth Paper Award (DATUM)**



### Aims and scopes

- ✧ To encourage young scientists to contribute to soil and water conservation research
- ✧ To promote the WASWAC engagement of Young Scientists
- ✧ Award 10 Youth Scientists (under 40 years old)
- ✧ Certificates and Honorarium (1000 USD)

### Organizing

- ✧ Organizing and Coordinates: WASWAC
- ✧ Financial Support: Beijing DATUM Technology Development CO.,LTD
- ✧ Executive Team:
  - 2<sup>nd</sup> IYFSWC organizing committee: Receiving Application, 1<sup>st</sup> eligibility screen
  - ISWCR Editorial Office: 2<sup>nd</sup> eligibility screen, coordinate awarding committee and reviewing panel, organize peer-reviewing, reporting
- ✧ Academic support
  - Awarding committee: evaluation and selection
  - Reviewing Panel: Peer-reviewing

## Procedure and Process

- ✧ Application: Jan. 1, 2018 to June 15, 2018
- ✧ Nomination and peer-reviewing: June 16, 2018 to August 10, 2018, including 3 reviews for each paper
- ✧ Evaluation and Selection: August 11, 2018 to August 20, 2018, totally 10 papers were selected
- ✧ Post Awarding: Since August 21, 2018
- ✧ Award Issuing: August 31, 2018, during the closing ceremony of the Second International Youth Forum of Soil and Water Conservation

## Final list for the award

Totally 10 young persons from 5 countries including China, Russia, Serbia, Iran, and Morocco were shared this great honor, the detailed information was shown as following table.

Information on Awardees of Outstanding Youth Paper Award  
in the second international Youth Forum of Soil and Water Conservation

No.	Name	Nationality	Title of Paper
1	Olga Komissarova	Russian	Land use in agricultural landscapes with chernozems contaminated after Chernobyl accident: can we be confident in radioecological safety of pland foodstuff?
2	Natalija Momirović	Serbian	Spantial assessment and mapping the areas sensitive to degradation in rurull area of municipality cukarica using Medalus model.
3	Zhang Guanhua	Chinese	Effects of patchy distributed <i>Artemisia capillaris</i> on overland flow hydrodynamic characteristics
4	Jiankun Huang	Chinese	Trees as large-scale natural phononic crystals
5	Yujie Wei	Chinese	Hydrological processes influenced by erosion induced land degradation for Ultisols under field rainfall simulation
6	Maja Brboric	Serbian	Lipophilic brominated flame retardants in the bottom sediment of the Danube river, Serbia
7	Shishkina Julia	Russian	Postglacial incision-widening-infill cycles at the Borisoglebsk upland: correlations between interfluve headwaters and fluvial network
8	Abdulvahed Khaledi Darvishan	Iranian	Spatial distribution and source identification of heavy metals (As, Cr, Cu and Ni) at sub-watershed scale using geographically weighted regression
9	Marina Slukovskaya	Russian	Technosols on mining wastes in the Subarctic: efficiency of remediation under heavy metals' aerial pollution
10	Hamza Briak	Moroccan	Use of a calibrated SWAT model to evaluate the effects of agricultural BMPs on sediments of the Kalaya river basin (North of Morocco)

## Award Issuing

The WASWAC outstanding Youth Paper Award was released in the closing ceremony. The first authors have received 1000 USD honorarium and certificate for each paper. Prof. Li Rui, Prof. Ning Duihu, Prof. Valentin Golosov, Dr. Sergey Chalov, Prof. Lei Tingwu, Prof. Miodrag Zlatic, Prof. Helmut Habersack, and Dr. Wang Yongsheng have been attended this ceremony and issued the award to the awardees.







Issuing the WASWAC outstanding Youth Paper Award

# Congratulations!!

## **WASWAC Council Meeting was Held During the 2<sup>nd</sup> IYFSWC**

The WASWAC council meeting was held in the morning of August 31, 2018 during the second IYFSWC at Moscow, Russia.



President Li Rui was in charge of this meeting. Prof. Ning Duihu, the secretary-general of WASWAC introduced the background, process, feedback, and results about the WASWAC outstanding youth paper award.

Dr Du Pengfei, the secretary of WASWAC, introduced development of WASWAC in recent two years briefly; Dr Qu Liqin, the executive editor for the official journal *ISWCR*, provided a detailed report for the WASWAC Outstanding Paper Award; Prof. Miodrag Zlatic, the councilor of WASWAC, summarized the achievement and analyzed the influence of this award; Dr Valentin Golosov, the councilor of WASWAC, introduced the preparations of

scientific committee of this forum; Prof. Lei Tingwu, the councilor of WASWAC, introduced the current situation of *ISWCR*, and proposed some plans for the future development; Dr Sergey Chalov, reported the full process of preparation this forum and summarized the experiences in holding such international conference; Prof. Seyed Hamidreza Sadeghi, the councilor of WASWAC, expressed the wishes to hold the related conferences of WASWAC in Iran in the future.

All participants expressed their confirmation to the progress achieved in recent years through the efforts of all councilors especially the secretariat. The following session forum was discussed preliminary but with no final decision, more development will be released in our website in time. Please pay your attention to our following news.

## **Communication Sessions Set up in the Second International Youth Forum of Soil and Water Conservation**

To provide a well communicate platform for all participants, beyond the keynote lectures, 5 sessions have been sub-divided:

**1. Challenges/actions of soil and water management in the changing world**

Totally 10 papers have been exchanged for this topic.

**2. Climate change and human impacts as a drivers of erosion, sediment dynamics and river morphology transformation**

Totally 10 papers have been exchanged for this topic.

**3. Erosion and sediment transport models and river basin management tools**

Totally 16 papers have been exchanged for this topic.

**4. Mechanism/processes and modeling of soil degradation**

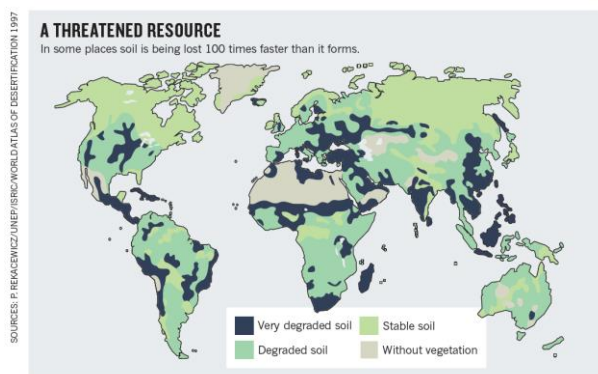
Totally 27 papers have been exchanged for this topic.

**5. Ecological restoration and regional sustainable development**

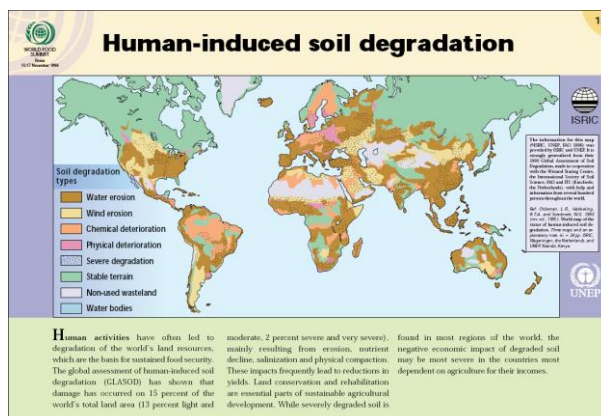
Totally 11 papers have been exchanged for this topic.



## Some Highlights in Reports



152 | NATURE | VOL 474 | 9 JUNE 2011



What do we know about soil erosion globally?

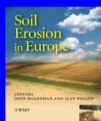
n = number of scientific papers on "soil erosion"

1980: n = ca. 10 000 (Belpomme 1980)

2018: "soil erosion": n = > 86 000 (> 8.5 x in 38 years!)

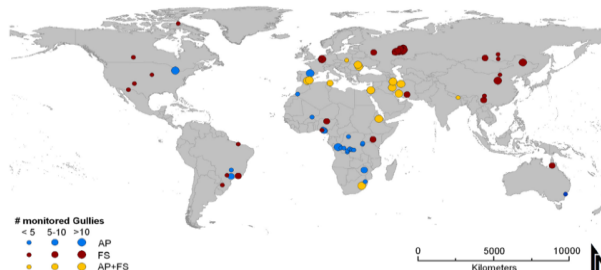
2018: "soil conservation": n = > 140 000

(Web of Science, All Databases, August 2018)



How fast do gully headcuts retreat?

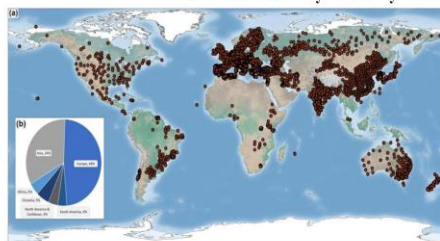
M. Vanmeirhe et al. / Earth-Science Reviews 154 (2016) 336–355



Overview of locations where gully headcut retreat rates were measured: AP = aerial photos, FS = field surveys; n = 933 gully heads; > 19 600 gully-years.

From Prof. Jean Poesen's report

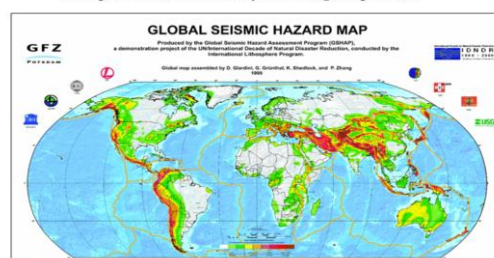
The global distribution of rainfall erosivity stations (brown dots) included in the Global Rainfall Erosivity Database (GloRED) is shown in (a); (b) shows the distribution of rainfall erosivity stations by continent.



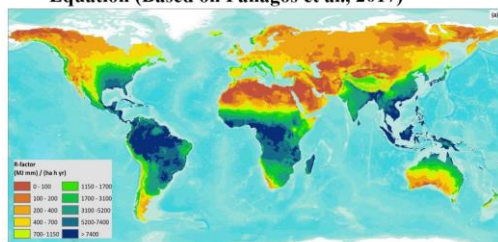
Only 9% of the available measuring stations are located in Africa and South America.

Maps generated with ESRI ArcGIS ver. 10.4 (<http://www.esri.com>) (after Panagos et al., 2017)

A world map produced by the Global Seismic Hazard Assessment Programme showing the distribution of seismic activity and therefore those areas most susceptible to tectonic activity and endogenic processes



World map showing the global pattern of rainfall erosivity as represented by the R factor in the Revised Universal Soil Loss Equation (Based on Panagos et al., 2017)



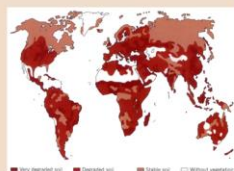
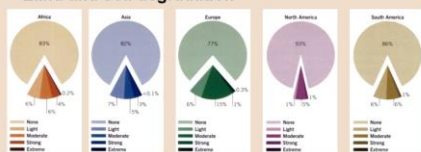
Continental perspective on the severity of water erosion in 2012 (USLE calculated erosion rates, Borrelli et al., 2018)



From Dr Valentin Golosov's report

## KEY ISSUES FOR STRATEGY ON LAND USE MANAGEMENT

### PRESENT STATE OF THE LAND Land and soil degradation



Nearly 2 billion hectares of land is affected by human-induced degradation of soils, putting the livelihoods of nearly one billion people at risk. Each year an additional 20 million hectares of agricultural land either becomes too degraded for crop production, or becomes lost to urban sprawl".

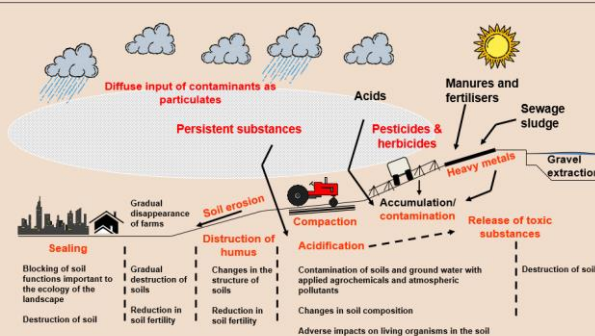
### How many years does it takes for world to get one more billion inhabitants (and in which year it happened)?



## ENVIRONMENTAL DEGRADATION – Simple model



## The impact of human activities on soil



EUROPEAN COMMISSION  
Joint Research Centre

European Soil Information

ies

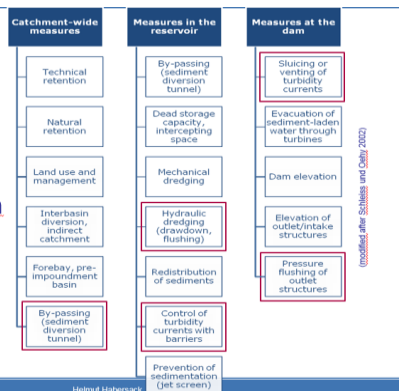
From Prof. Miodrag Zlatić's report

## Global Reservoir Sedimentation

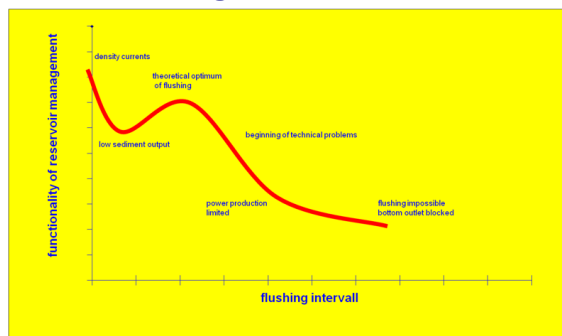
Region	Hydropower reservoirs: Date when 80 % of usable volume is silted up
Afrika	2100
Asia	2035
Australasia	2070
Central America	2060
Europe and Russia	2080
Middle East	2060
North America	2060
South America	2080

(Basson, 2009)

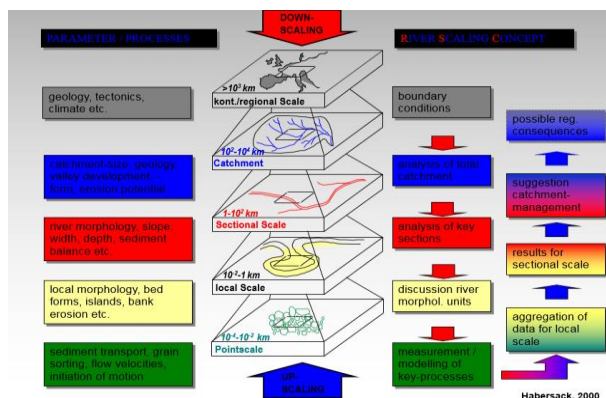
## Measures against reservoir sedimentation



## Reservoir management



Habersack et al., EU project Warmice



From Prof. Helmut Habersack's report

## Introduction on the Keynote Speakers

✚ Prof. Jean Poesen



Jean Poesen is a geographer and a full professor at the Division of Geography and Tourism within the Department of Earth and Environmental Sciences, KU Leuven (Belgium). His research interests include geomorphology, soil erosion, landsliding, sediment dynamics and yield, soil degradation, reservoir sedimentation, sediment yield assessment at various scales, hillslope hydrology, experimental geomorphologic techniques, desertification processes and mitigation techniques, soil erosion control, soil and water conservation (including the human dimension), impact of environmental change (land use, climate) on soil erosion processes and landsliding under different ecological conditions, assessment of vulnerability with respect to natural hazards, human-environment interactions in general and geography of developing countries.

✚ Dr Peter Strauss



Peter Strauss is Head of the Institute for Land and Water Management Research within the Federal Agency for Water Management. His main research interests are in developing



and application of models and tools for soil and water conservation at various spatial and temporal scales. Main purpose for the implementation of these models is to monitor soil erosion and sediment movement from micro plot to catchment scale with the aim to develop or improve methods and techniques for the implementation of a better soil and water conservation in agriculture. He is also dealing with diffuse pollution research at the small watershed scale trying to identify pathways of pollutant losses - mainly the nutrients nitrogen and phosphorus - from agriculture to surface water. In his lecture he will provide examples for current research issues at different scales related to conservation measures in agriculture.

 Prof. Helmut Habersack



Helmut Habersack holds currently a UNESCO Chair on “Integrated River Research and Management”, coordinating the “World’s Large Rivers Initiative”, and is a Full Professor of Hydraulic Engineering and Modelling at the Department of Water, Atmosphere and Environment at the University of Natural Resources and Life Sciences Vienna, Austria. In 2011 he became Head of the Institute of Water Management, Hydrology and Hydraulic Engineering, since 2010 he is the Head of the Christian Doppler Laboratory for Advanced Methods in River Monitoring, Modelling and Engineering.

Helmut Habersack has over 25 years of experience in river engineering, flood risk management, hydropower, navigation, sediment transport and river restoration. He is the author of over 80 journal publications, 10 monographs, over 100 proceedings etc. and gave over 150 national and international lectures. Helmut Habersack organized the International Conferences „On the Status and Future of the Worlds’ s Large Rivers“, which

were held in 2011 in Vienna, 2015 in Manaus/Amazon and 2017 in New Delhi. He won the “Science2Business 2015” Award.

 Prof. Valentin Golosov



Dr Sn Valentin Golosov is principal research scientist in Laboratory of Soil Erosion and Fluvial Process , Faculty of Geography Lomonosov Moscow State University. He is member of Steering Committee of International Sediment Initiative (ISI) UNESCO and World Association of Water and Soil Conservation (WASWAC), V. Golosov was President of the International Commission on Continental Erosion (ICCE) of International Association Hydrological Sciences in 2009-2013. He is member of editing board of some international scientific Journals, including Water and Soil Conservation, Journal of Agricultural Engineering and others). His research interests are focused on soil erosion, sediment and sediment-associated pollutants redistribution, sediment deposition and radioecology. V. Golosov is author of more than 200 papers published in National and International Journals and invited speaker on several International Conference and Symposium.

 Prof. Lei Tingwu



Dr. Lei Tingwu became a Professor and Major Professor of PhD students in China

Agricultural University in December 1998. He was selected into China Academy of Sciences "Hundred Talents Program" in 1998, as a research fellow for the Chinese Academy of Science "Introducing foreign outstanding talents "project in 1999. From May 1998, he was the research fellow and Major Professor of PhD students, Institute of Soil and Water Conservation, China Academy of Sciences. In 2007, Chinese Academy of Sciences appointed him as the director of State Key Laboratory of Soil Erosion and Dryland Farming on the Loess Plateau. He is the board member of Chinese Society of Agricultural Engineering and board member of Chinese Association of Soil and Water Conservation, and member of American Society of Agriculture and Biology Engineer, editorial board members of Journal of water and soil conservation, Trans of Agricultural Engineering, Journal of Agricultural Machinery, CATENA, Chinese Water and Soil Conservation Science, Ecology and Environmental Sciences.

 Prof. Miodrag Zlatić



Prof. Miodrag Zlatić, D.Sc. is full professor at Belgrade University, Faculty of Forestry, Department for ecological engineering in soil and water resources protection and is the Head of the Chair for Erosion and Torrent Control. His professional field is in sustainable land management, socio-demographic aspects of land degradation, social, economic and ecological effects of erosion and torrent control, policy of sustainable development of degraded areas, assessment of risk and uncertainty in SLM.

He was coordinator of several international projects/programmes in Serbia ("WOCAT-World Overview of Conservation Approaches and Technologies", "Community Based Rehabilitation of Degraded Land in Balkans"), as well as editor in chief of four



international monographies and one national. He was chairman and president of the organizing committee of several international conferences and workshops. He was the president of the World Association of Soil and Water Conservation – WASWAC, for the period 2005 – 2010, and at present is in the Council of WASWAC as Immediate past president.



**MANY THANKS**  
**FOR ALL PARTICIPANTS**  
**AND**  
**FOR ALL STAFFS WORKING FOR THE SECRETARIAT OF THE FORUM**