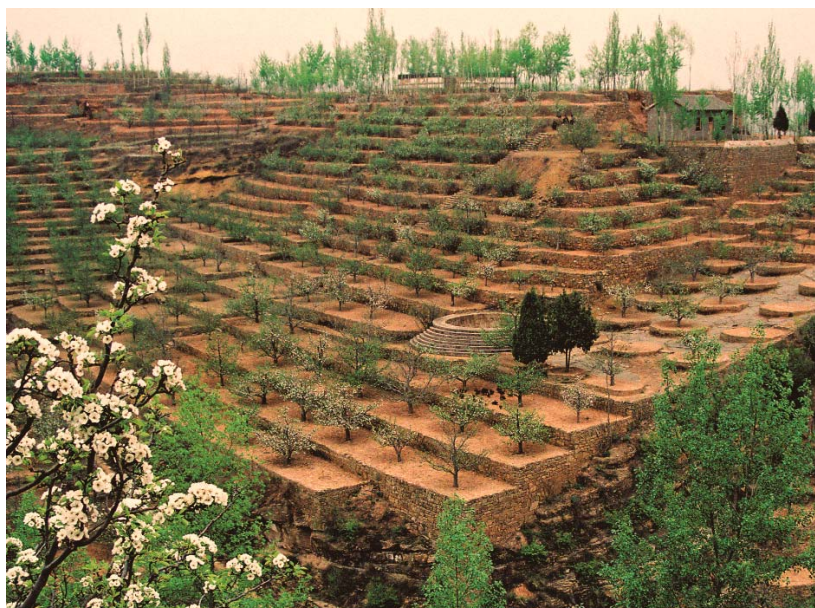




WORLD ASSOCIATION OF SOIL AND WATER CONSERVATION

HOT NEWS

Issue 09, 2015



WASWAC HOT NEWS No. 09, September, 2015

Contents

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

The International Youth Forum of Soil and Water Conservation Was Held Successfully

1-6

WASWAC outstanding Youth Paper Award

7-8

WASWAC Position Statement on Climate Change and Soil and Water Conservation

9-10

Invited Topic Speakers and Their Reports in IYFSWC

11-24

Presentations of young researchers in the IYFSWC

25-26

Cover photo: Measures to control soil erosion in Xianghuan County, Shanxi Province, China. The photographer is Mr Li Zhihuan.

Editors: Dr Du Pengfei, Contributors include all councilors of WASWAC and all participants of IYFSWC.



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

The International Youth Forum of Soil and Water Conservation Was Held Successfully

The International Youth Forum of Soil and Water Conservation (IYFSWC) was held in beautiful Nanchang successfully during October 16 -18.



This is the first worldwide forum focuses on the youth who are contributed in the soil and water conservation. More than 150 participants distributed in 20 countries have attended this forum. Famous scientists, experts in the related fields were invited to give keynote speech. In addition, former and current WASWAC presidents, including prof. Rattan Lal, Dr. Samran Sombatpanit, prof. Miodrag Zlatic and prof. Li Rui all attended this forum.

President of *Jiangxi Province Science and Technology Association*, Mr. Li Huadong attended the opening ceremony and addressed to welcome all

participants. Mr Song Leiming, Mr Liu Moyan, Prof. Li Rui, Prof. Carmelo Dazzi, Miss Natalija Momiroovie also gave speeches in the opening ceremony as the representatives from Jiangxi Province government, Nanchang Institute of Technology, WASWAC, European Society of Soil Conservation, and the young.



Addressing on the Opening Ceremony

Water is the origin of life and soil is the basis of all living things. Water and soil are the most elementary factors and the most important conditions for normal succession of ecological environment. To conserve soil and water to a great extent, efforts from all counties are necessary. This forum is very meaningful in providing a platform for the young people to communicate with famous experts and each other.

During three days conference, 15 outstanding scholars provided all participants a very high level academic presentation. Focusing on topic of this forum, “Youth – the future of soil and water conservation”, 22 young scientists were arranged in 3 groups to give excellent report based on their researches related to soil and water conservation.



Invited Speakers



The Representatives of Youth Speakers

During this forum, the organizer also provided a chance for all participants to visit the paragon park of science and technology in soil and water conservation of Jiangxi province. After this forum, some attendees also visited the ecological experimental station on red soil of CAS.



Visit the paragon park of science and technology in soil and water conservation of Jiangxi province



Visit the ecological experimental station on red soil of CAS

As an important content, the WASWAC outstanding Youth Paper Award was released in the closing ceremony. Total 10 paper were selected from submitted manuscripts after evaluation from international experts. Each first author for the ten papers have received 1000 USD honorarium and certificate. Prof. Des Walling, Prof. Winfried Blum, Prof. Miodrag Zlatic, Dr Samran Sombatpanit, Prof. Li Rui, Prof. Jin Zhinong and Prof. Fan Houbao, were invited to be the awarding guests to issue honorarium and certificate to the winners.





Issuing the WASWAC outstanding Youth Paper Award

The sponsors for this forum include WASWAC, China Society of Soil and Water Conservation (CSSWC), International Research and Training Center on Erosion and Sedimentation (IRTCES), Jiangxi Science and Technology Association (JSTA), and Department of Water Resources of Jiangxi (DWRJ). The Co-organizers include Southern Research Society of Soil and Water Conservation (SRSSWC), Institute of Soil and Water Conservation of CAS&MWR (ISWC), Department of Soil and Water Conservation of Changjiang River Scientific Research Institute (DSWC), Jiangxi Institute of Soil and Water Conservation (JISWC) and Jiangxi Province Water Conservancy Science Research Institute (JPWCSRI).

Many thanks to

All distinguished guests

All participants to the Forum

All contributor to the Forum

All valunteers for the Forum

WASWAC outstanding Youth Paper Award

✚ 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: **Nanchang Institute of Technology**

Executive team

- **IYFSWC organizing committee:** Receiving Application, 1st eligibility Screen
- **ISWCR Editorial Office:** 2nd 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, Oct 1, 2014-April 31, 2015



Nomination and Peer-reviewing, Aug 1 -Sept. 15, 2015

3 reviewers for each paper



Evaluation and Selection, Sept. 15-Sept. 30, 2015

10 papers selected



Post Awarding (processing), Since Oct 1

Process and the awarded papers to be published on ISWCR

Nominating

After peer review, 10 papers nominated based on three criteria:

- the average score from the 3 reviewers >6.0
- at least three reviewers recommends to publish the paper in ISWCR (A/B) or at least two reviewers recommended to publish the paper in ISWCR without or with minor revision (A);
- to enlarge the geographical coverage of the award, the awarding gives priority to papers out of China when there are papers with same quality or the quality difference are not significant.

Final list for the award

Name	Country	Recommendation	Score	Title
S. Nouwakpo	USA	AAA	8.2	Estimating Flow Concentration and Sediment Redistribution on Saline Rangeland Communities
F. Tang	CHINA	AAA	8.2	Effects of Vegetation Restoration on the Aggregate Stability and Distribution of Aggregate-Associated Organic Carbon in a Typical Karst Gorge Region
S. Xiao	CHINA	AAB	8.3	Responses of Soil Respiration and its Main Components to Vegetation Restoration in Eroded Red Soil
X. Lu	CHINA	AAB	6.6	Spatial Distribution and Temporal Trends in Potential Evaporation of Jiangxi Province from 1961 to 2013
Y. Ban	CHINA	AAC	7.9	Study on the Facilities and Procedures for Un-frozen Soil Erosion
K. Nissaf	TUNISIA	ABB	6.9	Rehabilitation of Oasis System in Southern Tunisia for Livelihood and Food Security
B. Wang	CHINA	ABB	6.9	Soil Erodibility in China: An Improvement to the USLE-K Factor Predication
N. C. Salvador	THE PHILIPPINES	BBB	6.0	Application of the Universal Soil Loess Equation-Modification in Soil Erosion Risk Mapping
F. Wassar	ITALY	ABC	7.3	Predicted and Measured Soil Retention Curve Parameters in Lombardy Region Northern of Italy
A. M. Petrović	SERBIA	ABC	6.3	Torrential Floods as Natural Hazards in Hazards in Sumadija Region, Serbia

A: Recommended to publish on ISWCR without revision or with minor revision

B: Recommended to publish on ISWCR with major revision

C: Do not Recommended to publish

Congratulations!!

WORLD ASSOCIATION OF SOIL AND WATER CONSERVATION

Position Statement on Climate Change and Soil and Water Conservation

The world climate is changing and is going to alter humanity's future. Among the greatest threats that climate change is projected to pose to the future of humanity is decreased food security. The world population is expected to increase by several billion people over the next few decades, and a large increase in worldwide agricultural productivity will be needed to achieve food security. A changing climate threatens the important worldwide system that is needed to produce this food, and our soils, which are a key world resource for humanity. Now that we have so many cities with millions of people, the steady flow of food to these cities is needed, and a changing climate poses a threat to the system. Humans have depended on soil resources for their survival on this planet, and they have been using soil resources for thousands of years to produce food, biodiversity, and ecosystem services. **Human activities have contributed to degradation of the world's soils, and current erosion and degradation rates already threaten the soil that supports human civilizations.**

Demands on soil from expansion of cities, industries, and roads are contributing to soil scarcity. Additionally, erosion, desertification, deforestation, and the salinization and depletion of surface and underground water resources that are key in agricultural production, pose a threat to the future of food security and thus the national security of countries, a threat that will grow with climate change. A changing climate threatens to accelerate all of these impacts.

It is clear that these challenges pose a threat to the future of humanity. Fortunately, soil and water conservation practices have the potential to conserve the soil and water resources needed to sustain/increase agricultural productivity to the levels needed by 2050.

For these reasons, WASWAC is releasing this position statement about the

critical need to implement policies and management practices that conserve soil and water across the world for climate change mitigation and adaptation and the survival of the human species. **WASWAC recommends that governments and institutions: *Develop policies that improve soil management*** to achieve a balance between increasing productivity and maintaining organic matter in the soil, reducing soil losses, and improving soil health and soil security. The carbon cycle is tied to how we manage soils, and soil carbon is one of the larger pools in the carbon cycle and contributes to improved soil productivity.

Encourage communication of soil and water conservation programs by developing communication that connects science to land managers and the public; teaching the value of soil carbon; increasing training; and enhancing exchange (at meetings, forums, etc.).

Develop, maintain, and/or expand programs for soil and water conservation practices for climate change mitigation and adaptation that keep surface residue covering the soil surface; promote no till systems; improve soil function with soil carbon; use multiple conservation practices at a field level and off-site; use precision conservation; promote energy efficiency; value water more; minimize greenhouse gas losses; and improve nutrient cycling, nitrogen use efficiencies and soil health. *In summary, apply soil and water conservation principles and practices to improve worldwide sustainability and ecosystem services.*

Fund research in soil and water conservation that pays dividends long term.

References:

Delgado, J. A., Groffman, P. M., Nearing, M. A., Goddard, T., Reicosky, D., Lal, R., Kitchen, N. R., Rice, C. W., Towery, D., & Salon, P. (2011). Conservation practices to mitigate and adapt to climate change. *Journal of Soil and Water Conservation*, 66(4), 118A-129A.

Invited Topic Speakers and Their Reports in the International Youth Forum of Soil and Water Conservation

(1) Prof. Rattan Lal



THE OHIO STATE UNIVERSITY

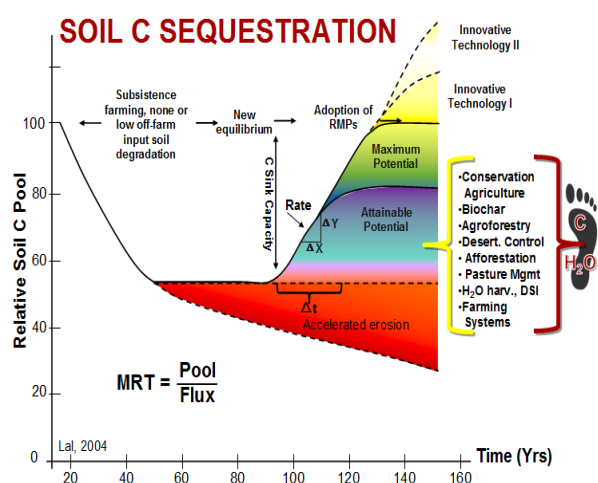
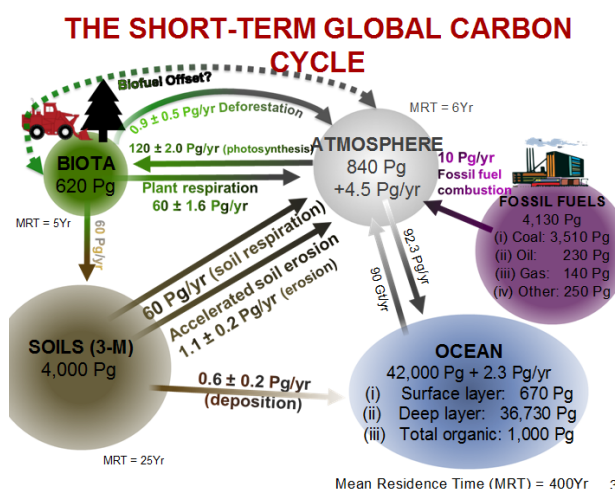
Soil and Climate Change

Rattan Lal

Carbon Management and Sequestration Center

The Ohio State University, Columbus, OH

IYFSWC, Nachang, China, 16-17 October, 2015



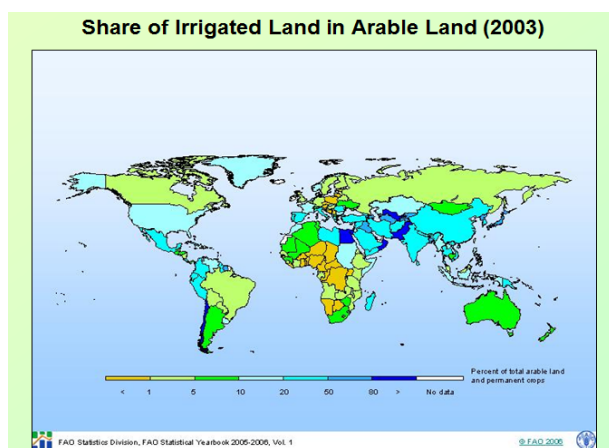
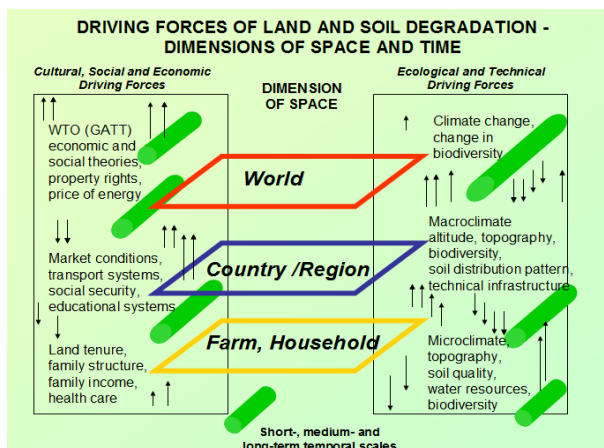
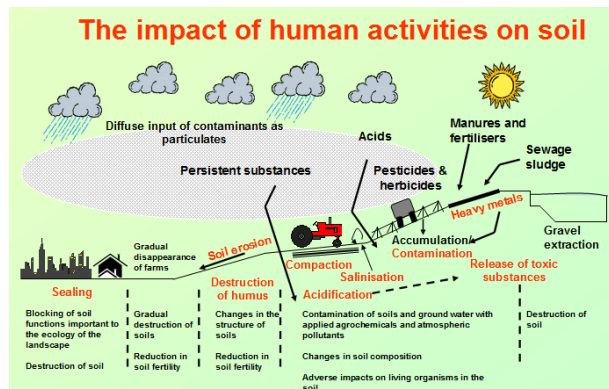
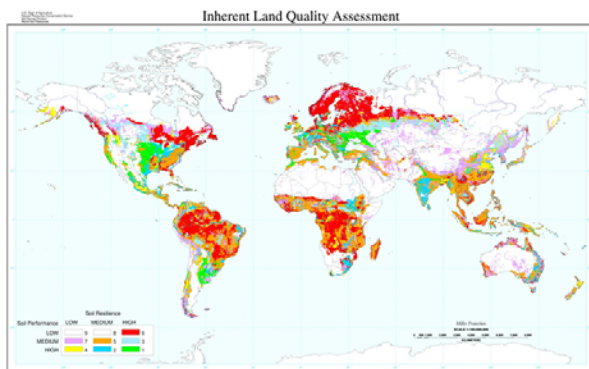
(2) Prof. Winfried E.H. Blum

LAND RESOURCES ALLOCATION: GLOBAL DEVELOPMENTS AND FUTURE SCENARIOS – A WORLD WIDE PERSPECTIVE

by

Winfried E.H. Blum

Institute of Soil Research, Department of Forest and Soil
Sciences, University of Natural Resources and Life Sciences
(BOKU) Vienna/Austria.
winfried.blum@boku.ac.at



(3) Prof. Des Walling



Soil erosion and environmental protection: changing perspectives, challenges and opportunities

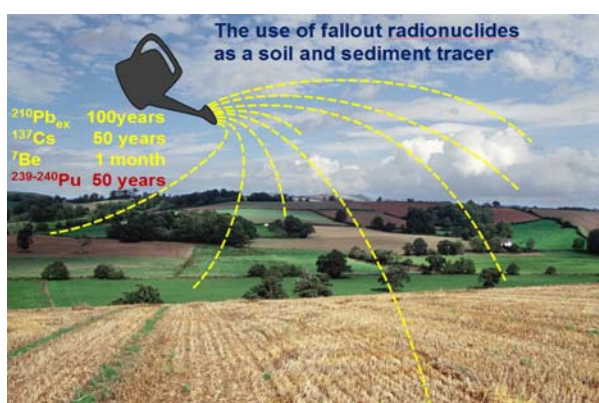
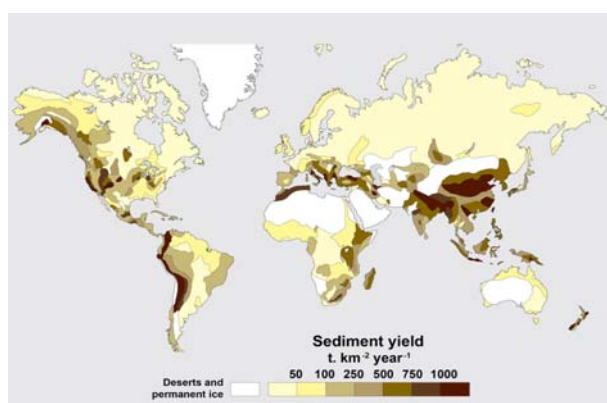
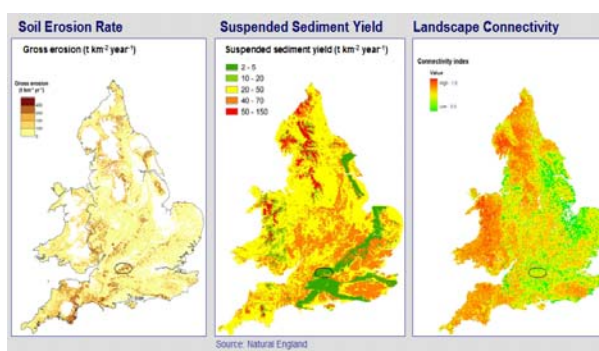
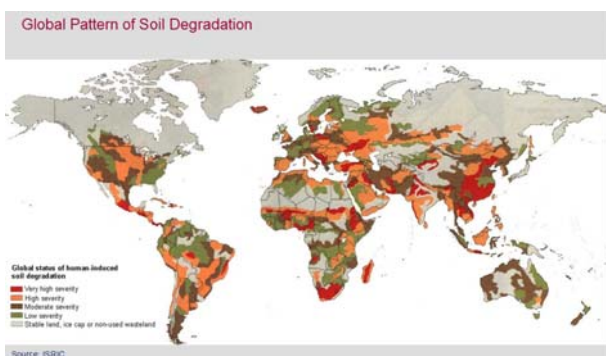
DES WALLING

Geography, College of Life and Environmental Sciences

University of Exeter, UK



International Youth Forum on Soil and Water Conservation, Nanchang, China,
October 16-18, 2015



(4) Prof. Chi-hua Huang

Challenges in current process-based soil erosion prediction models



**National Soil Erosion Research Lab
West Lafayette, Indiana, USA**

Chi-hua Huang
USDA-ARS

Kossi Nouwakpo
Univ. Nevada-Reno

**International Youth Forum on Soil and Water Conservation
October 16-18, Nanchang, China**

Erosion Research in the US

- 1929** – Congress appropriated \$160,000 for erosion research
10 Experiment Stations established (H.H. Bennett)
- 1940-50** – USLE factors identified: Zingg: L, S; Smith: L, S, P;
Browning: L, S, P; Musgrave: R, K, L, S, C; Wischmeier: R, K, C.
- 1960-70** – USLE, Rainfall Simulation (for K & C factors), Process-based erosion model concept
- 1980- Now** – Develop process-based model, Soil and water quality impacts, Geo-spatial data processing

Approach: Empirical to process-based

Data Collection: Natural runoff plot to rainfall simulation

Surface Conditions Affecting Erosion:

- Microtopography or surface roughness.
- Macroporosity and bulk density.
- Wet consolidation.
- Drying and cracking due to shrinkage.
- Prior rain history.
- Freeze and thaw cycle.
- Biological activities and plant materials.
- Seepage and subsurface hydrology.

Challenges in process-based soil erosion model concept:

Sediment transport capacity (T_c) is mostly calculated from sediment property and flow hydraulics. Effects of soil erodibility and subsurface hydrology on T_c have not been considered.

Most T_c measurements were made on fixed beds, i.e., non-erodible channels. Can T_c be measured from erodible channels?

Current sediment deposition equations only include sediment size and concentration, and flow characteristics. Again, subsurface hydrology effects have not been considered.

Sediment transport	F_n (flow hydraulics, sediment property)
Erosion and deposition	F_n (flow hydraulics, soil erodibility, subsurface hydrology, etc)

Should these processes be modeled separately?

Can the concept of transient storage in solute transport be applied?

W. H. Wischmeier, Developer of the Universal Soil Loss Equation, USLE



May 1999. 10th ISCO Conference, W. Lafayette, IN

(5) Prof. Jose Luis Rubio



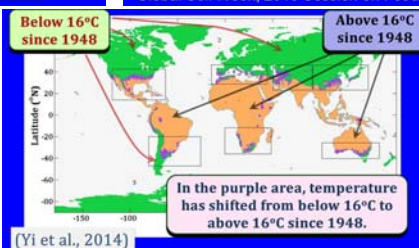
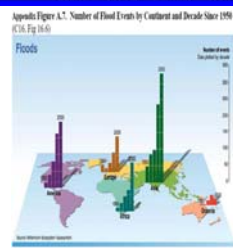
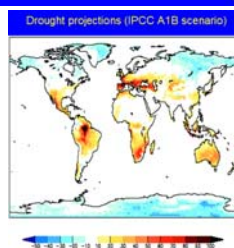
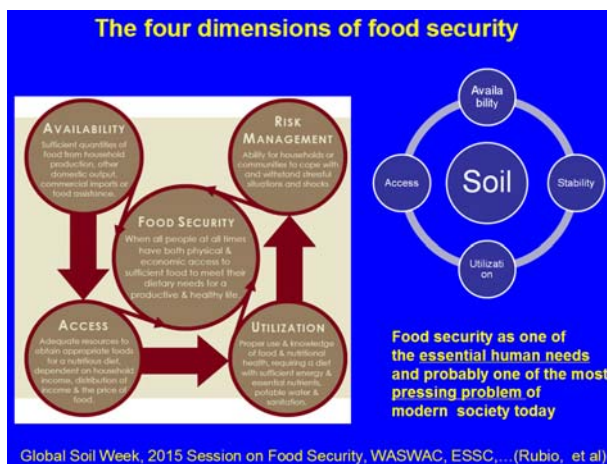
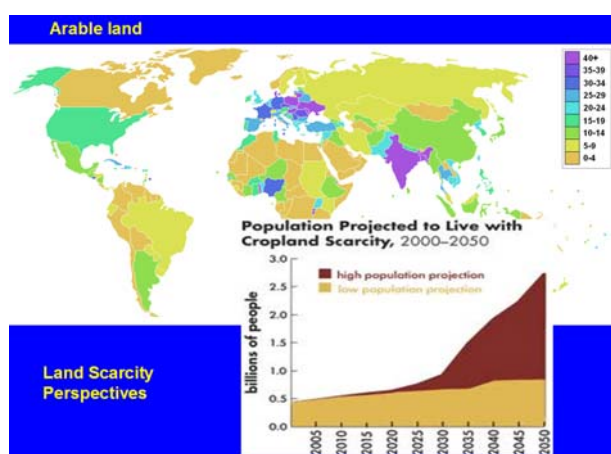
**International Youth
Forum on Soil and
Water Conservation
WASWAC**

**Nanchang, China
October 16-18,, 2015**

The crucial role of soil and water conservation for modern society. Threats, challenges and opportunities in transition scenarios

José Luis Rubio

Ex President European Society for Soil Conservation-ESSC
Vice Chair European Soil Bureau Network- ESNB (JRC,EC)
Centro de Investigaciones sobre Desertificación- CIDE-CSIC
Valencia, España



(6) Prof. Fenli Zheng

International Youth Forum on Soil and Water Conservation (IYFSWC)
Youth - the Future of Soil and Water Conservation

Quantification of Gully Erosion Process on the Loess Plateau

Fenli ZHENG, Chao QIN, Ximeng Xu

Institute of Soil and Water Conservation, CAS&MWR

Institute of Soil and Water Conservation, Northwest A&F University



Nan Chang

2015.10.17

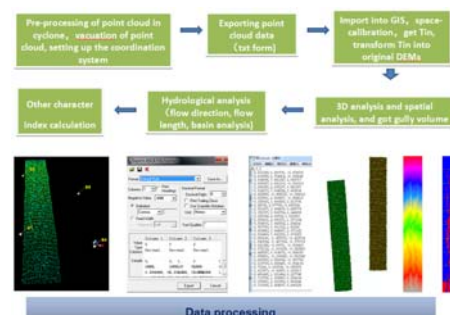
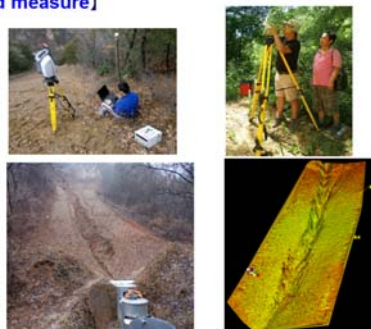


3 GPS (RTK) Technique

Trimble-5700

4 3-D laser scanning (LiDAR)

[Field measure]



(7) Prof. Jorge Delgado

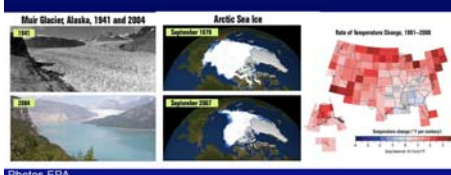
“Use of Management and Conservation Practices to Adapt to Climate Change”

Dr. Jorge A. Delgado
Soil-Plant-Nutrient Research Unit,
USDA/ARS



Major World Challenges Related to Soil and Water Conservation

- Climate change is occurring, and the implementation of sound conservation practices will be key for each country's health, social stability, and security.



Major World Challenges Related to Soil and Water Conservation

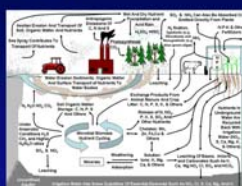
- Since irrigated systems have, on average, double the yields of non-irrigated systems, the depletion and salinization of these key world resources results in additional pressure to increase agricultural productivity.



The Carbon and Nitrogen Cycles and Agricultural Influences on Greenhouse Gases

Greenhouse Gases Contributed by Agriculture are an Important Factor in Climate Change.

Agriculture plays an important role in the GHG fluxes of CO₂, N₂O and CH₄, contributing 6% of total United States GHG emissions (USEPA 2010b).



Soil and Water Conservation Principles Applied to Climate Change Mitigation and Adaptation

Principles for Soil and Water Conservation Practices for Climate Change Mitigation and Adaptation

- Effectiveness Enhanced with Landscape-Targeting Precision Conservation.
- We need to account for spatial and temporal variability and avoid a one-size-fits-all approach if we are to maximize conservation.



(8) Prof. Mohammed Golabi

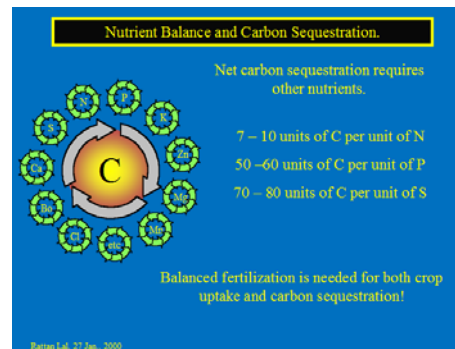
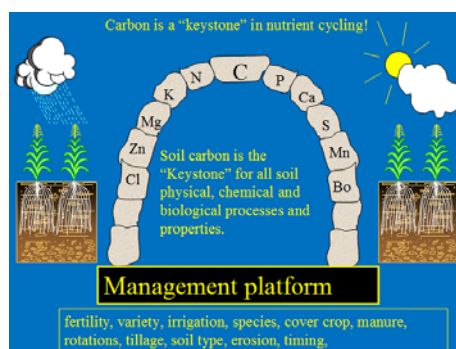
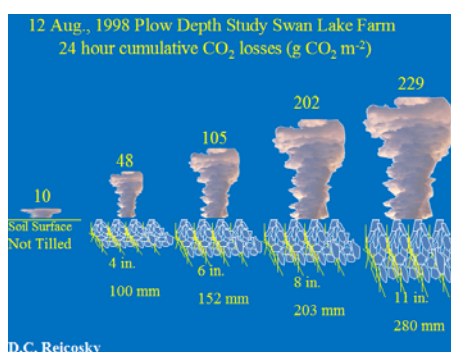
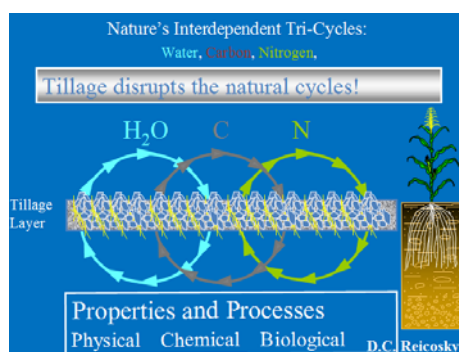
Evaluating the Role of Conservation practices on Reducing the net Carbon loss from the Soil in order to Lower the CO₂ concentration into the Atmosphere

Mohammad H. Golabi, Ph.D., Soil Scientist
Clancy Iyekar, Research Associate
Ferdinand Galsim, Graduate student

COLLEGE OF NATURAL AND APPLIED SCIENCES

University of Guam

IYFSWC Conference
Nanchang, October, 2015



(9) Prof. Ildefonso Pla Sentís

International Youth Forum on Soil and Water Conservation (WASWAC)

16-18 October 2015

Nanchang, China

CRITICAL ANALYSIS OF PRESENT RESEARCH AND EDUCATION ON SOIL AND WATER CONSERVATION

Ildefonso Pla Sentís

Emeritus Prof. of UDL

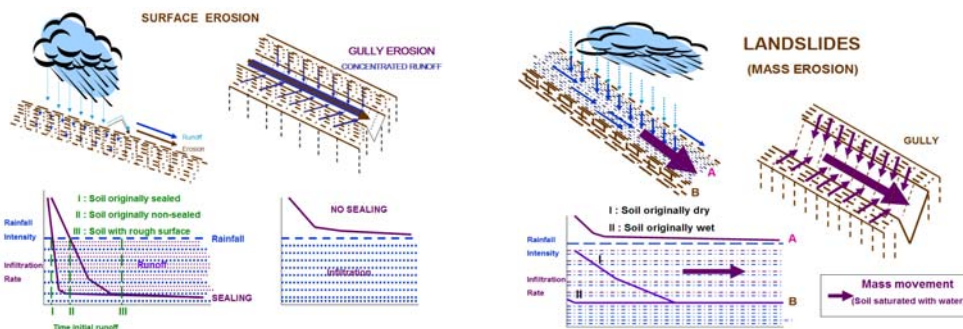
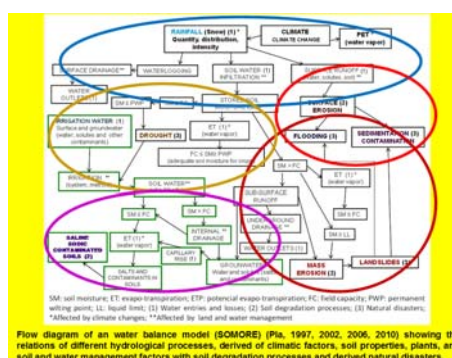
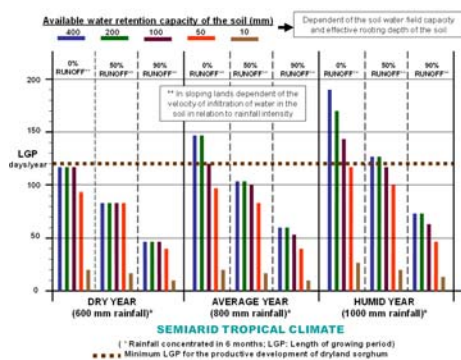
President of ISCO

Vice-President of WASWAC

Member of the Exec. Com. of ESSC

Universitat de Lleida, Lleida (Spain)

ipla@macs.udl.es



(10) Prof. Carmelo Dazzi

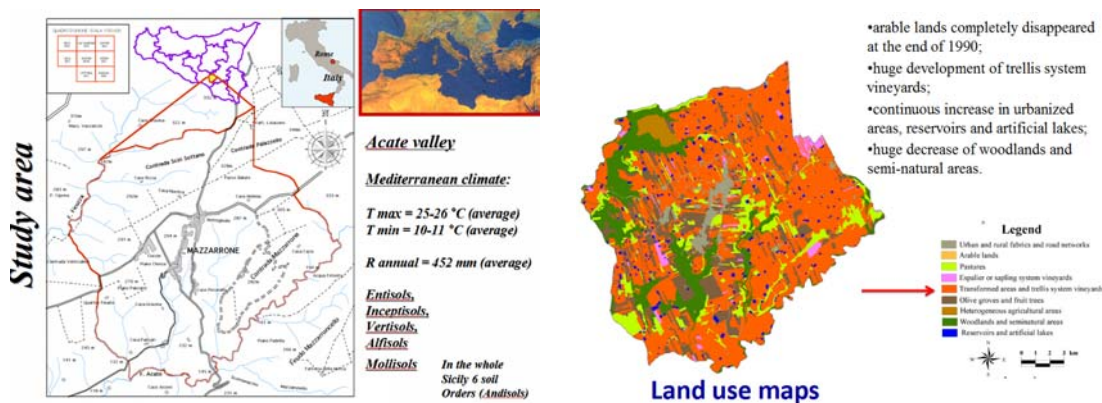


Carmelo Dazzi
University of Palermo, Italy



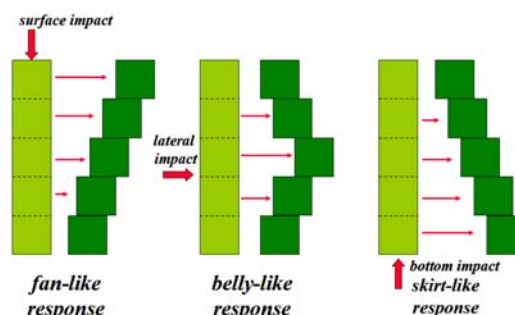
Taxonomic and Environmental Implication of Pedotechnique in Large Scale Farming

IYFSWC - NANCHANG
16 – 18 November 2015



Environmental aspects

Soil response to human impact (Targulian, 2008)



Category	Name	Formative element	Definition
Order	ANTHROSOLS (from Gr. <i>anthropos</i> , meaning "man")	Ant	Soils built or strongly influenced by human activity.
Suborder	XER-ANT	Xer (from Gr. <i>xeros</i> , meaning "dry")	Anthrosols with a xeric moisture regime.
Great Group	GEOFRAGME-XERANT	Geofragmatic (from Gr. <i>geomai</i> , meaning "to become heart" and from L. <i>fragmenta</i> , meaning "spoils")	Anthrosols formed on or with mineral materials that have been moved by man with earthmoving equipment ¹ . Generally the landscapes are human reshaped ² .
Subgroup	MISCIC GEOFRAGMEXERANT	Miscic (from L. <i>miscere</i> , meaning to mix)	Anthrosols formed on or with mineral materials that have been moved by earthmoving equipment ¹ and that have been deeply mixed by heavy machinery for farming purposes. Generally the landscapes are human reshaped ² .

(11) Prof. Mildrag Zlatic

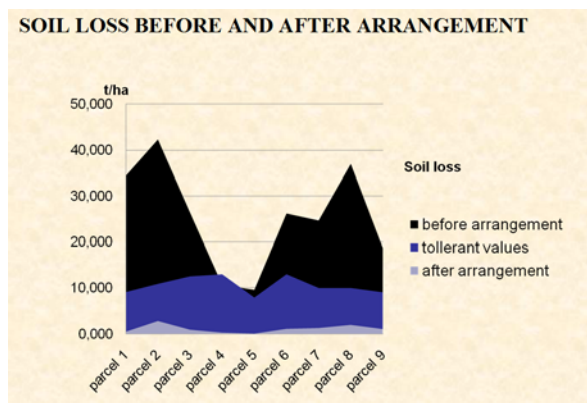
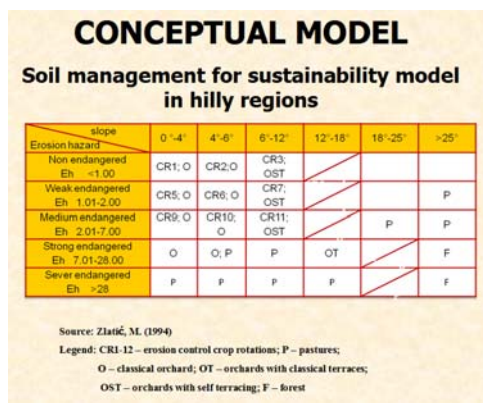
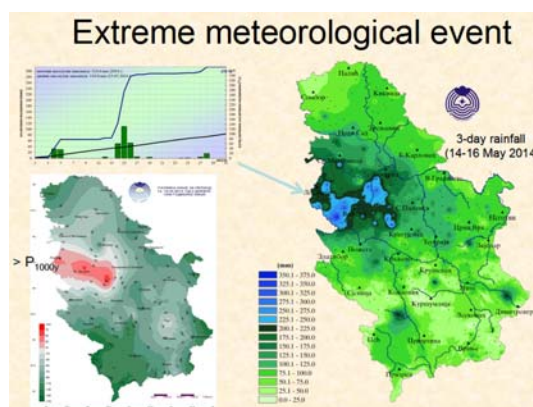
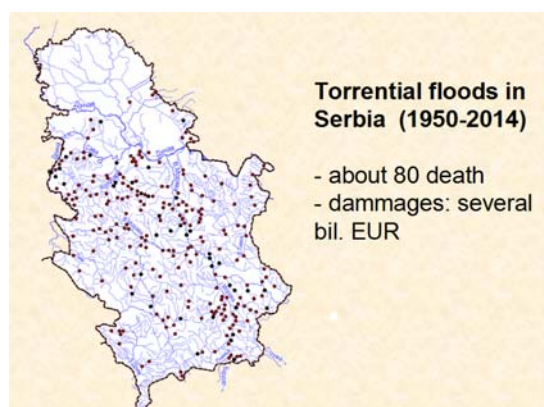
CAUSES OF LAND DEGRADATION AND ITS CONTROL IN SERBIA

- MODELING, INOVATIONS, PRACTICE -

Prof. Miodrag Zlatić

Chief of the Department of Erosion and Torrent Control, Belgrade university, Faculty of Forestry

Immediate past president of the World Association of Soil and Water Conservation



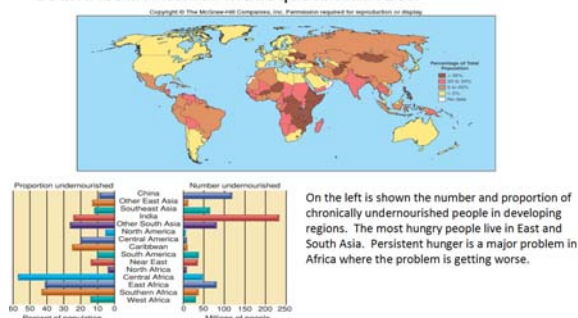
(12) Prof. Xiaohua Wei

Report Title: An ecological perspective on forests and water in large watersheds: implications for soil and water conservation

(13) Prof. Chinapatana Sukvibool



Countries at risk for inadequate nutrition

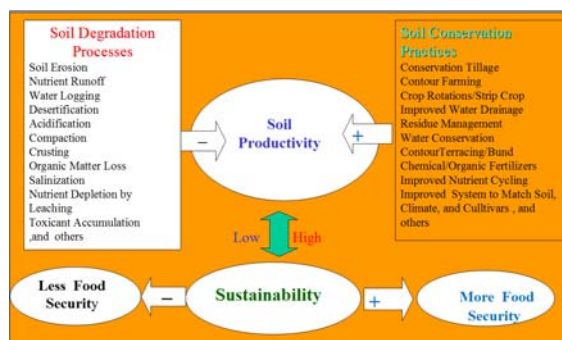
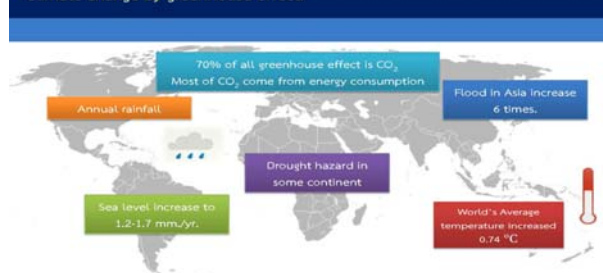


Thailand's Food Stability

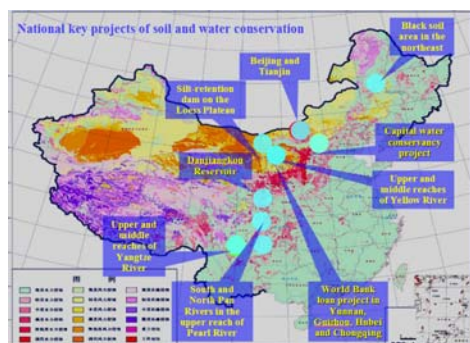
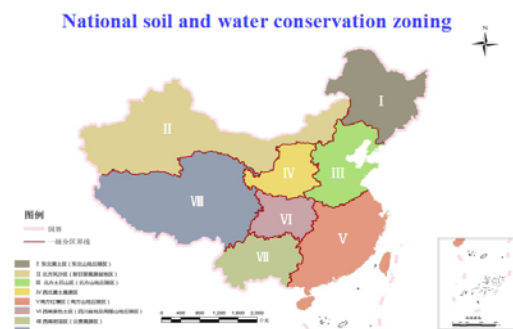
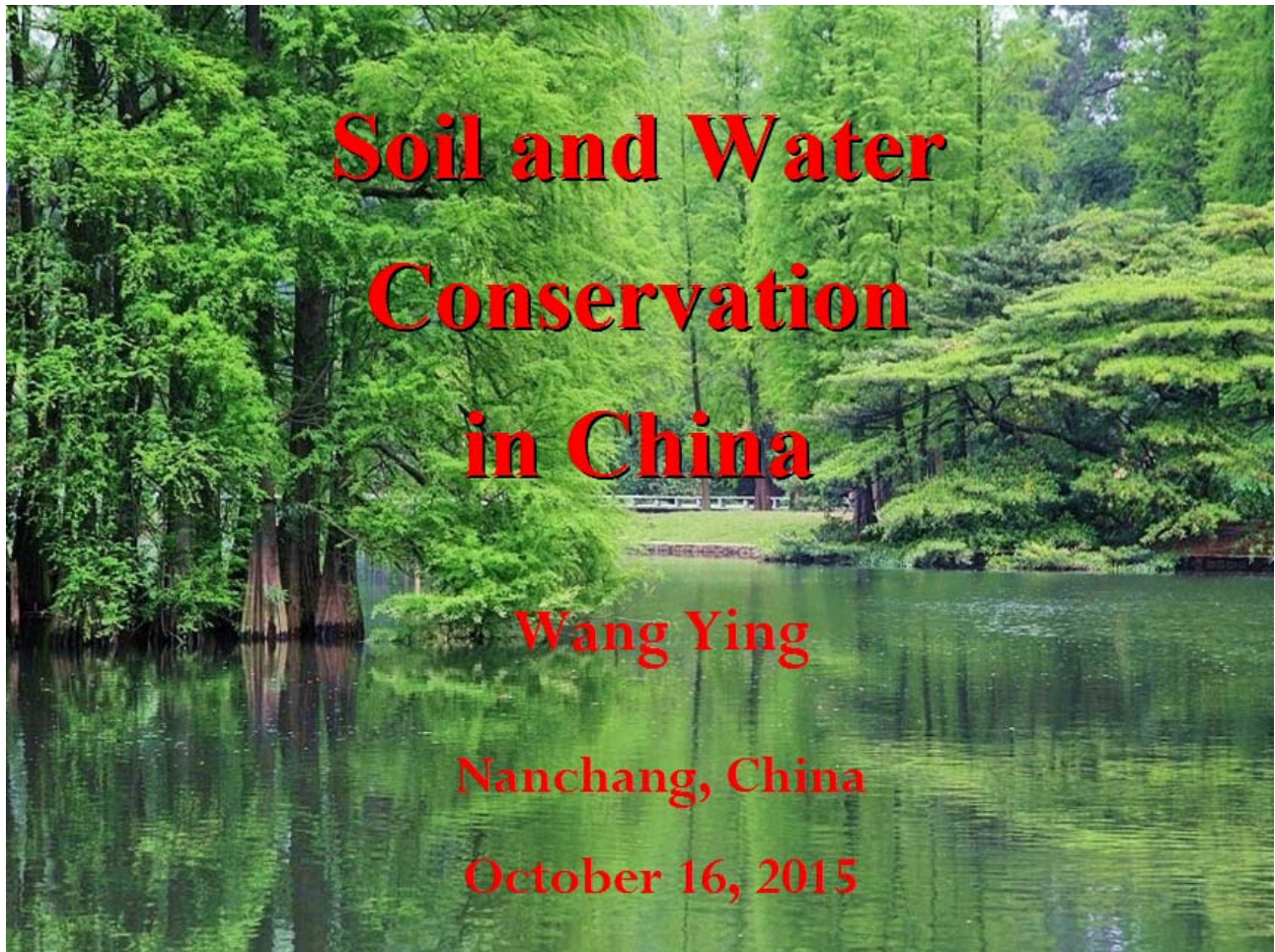


Food Security Situation.

Climate change by greenhouse effect.



(14) Dr. Ying Wang (Reported by Dr. Pengfei Du)



(15) Prof. Tingwu Lei (Reported by Dr. Xiaonan Shi)

IYFSWC-Nanchang-201510

Measurement of shallow water flow velocity

Dr. Tingwu LEI

China Agricultural University

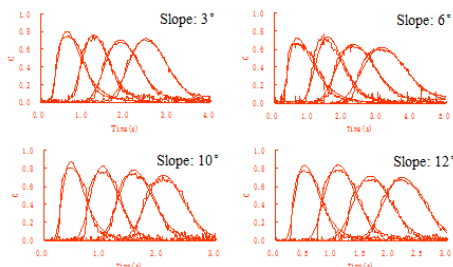
Email: leitingwu@cau.edu.cn

Present by: Xiaonan SHI

Institute of Tibetan Plateau Research, Chinese Academy of Sciences

Email: shixiaonan@itpcas.ac.cn

Model simulation result



Parameters estimation using the least square method

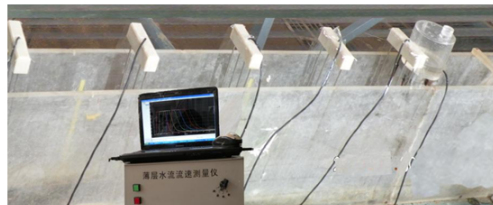
$$C(x, t) = C_0 \frac{x}{2t\sqrt{\pi D_H t}} \exp\left(-\frac{(x - ut)^2}{4D_H t}\right)$$

Observed $C(x, t)$ in the experiment

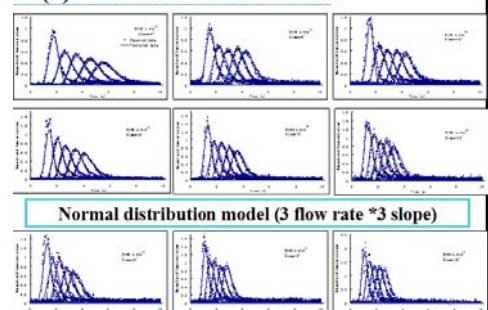
LEI Tingwu et al. / Journal of Hydrology / 2010

The B.C. is measured, by adding one more sensor at a location as close as possible to the electrolyte injector;

Using the measured signal here as B.C. instead of the pulse function.



(1) Measured B.C. method



NOTE: All PPTs will be uploaded to our website soon after speaker's authorization.

Presentations of young researchers in the IYFSWC

- ✧ *Dongbing Cheng*, Study on Soil Erosion Model of Engineering Excavated Slope under upslope runoff condition
- ✧ *Wenfei Liu*, Effects of forest changes on streamflow in a large forested watershed, Southeastern in China
- ✧ *Jinhua Wang*, The study in the impact of vegetation coverage change on runoff and sediment in wind-water erosion crisscross area
- ✧ *Cao Longxi*, Grass hedge effects on controlling erosion from concentrated flow: a case study in the red soil region of China
- ✧ *Ren Zongping*, Respond of runoff and soil erosion to global climate change in Yanhe watershed
- ✧ *Zho Jianmin*, The embedded soil erosion
- ✧ *Wu Jianping*, Ecological function of understory plants in the eucalyptus plantation, subtropical China
- ✧ *Honglang Duan*, Elevated [CO₂] did not alleviate the negative effects of drought and high temperature on two contrasting gymnosperm tree species
- ✧ *Yi He*, Trend and periodicity of precipitation in the Huangfuchuan Basin, Northwest China
- ✧ *Zhijie Shan*, Application of EN-1 soil stabilizer on soil conservation
- ✧ *Jiawen Wang*, Effects of conservation tillage on soil moisture in a slope orchard of jujube orchard
- ✧ *Jinhua Cheng*, Application of Landscape pattern analysis to quantitatively evaluate the structural distribution characteristics of soil preferential paths in farmland

- ✧ *Ning Wang*, Impacts of soil erosion on the dynamics of soil seed banks in the Chinese Hill-Gully Loess Plateau Region
- ✧ *Yongyan Wang*, The discrepancy of riparian zone Sediment of tributaries and main stream in Three Gorges Reservoir
- ✧ *Yanfeng Jia*, Soil anti-scourability and influence factors of brown earth during spring thaw period in the black soil region of Northeast China
- ✧ *Yingchun Liao*, Relationship of absorptive root biomass to aboveground growth in Chinese fir plantations in subtropical China
- ✧ *Wenfei Liu*, Effects of forest changes on streamflow in a large forested watershed, Southeastern in China
- ✧ *Sayjro Kossi Nouwakpo*, Estimating Flow Concentration and Sediment Redistribution on Saline Rangeland Communities
- ✧ *Shengsheng Xiao*, Responses of soil respiration and its main components to vegetation restoration in eroded red soil
- ✧ *Ana M Petrovic*, Torrential floods as natural hazards in Sumadija region, Serbia
- ✧ *Fu-kai Tang*, Effects of Vegetation Restoration on the Aggregate Stability and Distribution of Aggregate-Associated Organic Carbon in a Typical Karst Gorge Region
- ✧ *Bin Wang*, Soil erodibility estimation in China: An alternative equation for determining USLE-K factor
- ✧ *Xianghui Lu/ Hua Bai*, Spatial Distribution and Temporal Trends in Potential Evaporation of Jiangxi Province from 1961 to 2013
- ✧ *Yunyun Ban*, Study on the Facilities and Procedures for Un-frozen Soil Erosion