ISI Online Training Workshop on Sediment Transport Measurement and Monitoring

July 5-9, 2021
IWHR Webinar system

Sponsored by
UNESCO-IHP
Ministry of Water Resources, P.R. China
Organized by
UNESCO-IHP International Sediment Initiative (ISI)
International Research and Training Center on Erosion and Sedimentation (IRTCES)
China Institute of Water Resources and Hydropower Research (IWHR)
UNESCO Beijing Office
Co-sponsored by
World Association for Sedimentation and Erosion Research (WASER)
International Association for Hydro-Environment Engineering and Research (IAHR)
Jingjiang Bureau of Hydrology and Water Resources Survey

GOAL: The ISI Online Training Workshop on Sediment Transport Measurement and Monitoring will take place from July 5-9, 2021, and represents a key initiative of the International Sediment Initiative (ISI) of UNESCO for 2021. It meets the objectives of the new strategy of ISI, which in turn is a contribution to the 8th phase of the IHP (2014-2021), focuses on "Water security: responses to local, regional and global challenges", and addresses the wide-ranging environmental, social and economic impacts of erosion, sediment transport and sedimentation processes. Measurement and monitoring of sediment transport are of critical importance for managing and mitigating these impacts.

> ***Sediment Transport*** refers to the movement of solid particles (sediment), typically due to a combination of gravity acting on the sediment, and/or the movement of the fluid in which the sediment is entrained. The primary modes of sediment transport in rivers are as bedload and suspended load. Variations in the relative importance and areal distribution of these different modes of sediment transport cause changes in river-channel form and therefore fluvial habitats. Fine sediment is also frequently seen as a pollutant, because of both the adverse physical impact of fine sediment itself on aquatic habitats and its role as a vector for the transfer and fate of important sediment-associated pollutants, including pesticides, as well as nutrients such as phosphorus. Understanding sediment transport and the conditions under which sediment is mobilized or deposited in catchments and river/reservoir systems and quantifying the magnitude of the associated fluxes is therefore critical to understanding and managing sediment and sediment-related problems in rivers/reservoir systems. ***Sediment Measurement and Monitoring*** are, for example, the key to providing accurate information on sediment loads and concentrations and their variation in space and time, which is in turn a key requirement for successful river basin and reservoir management. The ISI Online Training Workshop on Sediment Transport Measurement and Monitoring has been designed to address the needs of engineers, and scientists, engaged in river basin management, in various countries and especially of technicians and early career researchers, in developing countries with serious sediment problems. Through lectures and discussion, participants will gain fundamental knowledge of, and familiarity with, relevant methods, techniques and concepts in the field of sediment measurement and monitoring needed to support integrated sediment management in river basins, as well as extending their professional networks.

DATE: July 5-9, 2021
ONLINE PLATFORM: IWHR Webinar system (similar to ZOOM, the website will provide details)

TOPICS OF THE WORKSHOP
The training workshop will extend over five days and will including lectures and discussion. The lectures will address the following topics:

1. Standard measurement and monitoring techniques used to collect data on water discharge and sediment loads for rivers and reservoirs;
2. Recent advances in sediment transport measurement and monitoring: online

monitoring of suspended sediment concentrations in rivers;
3. Sediment measurement and monitoring methods for mountain streams;
4. Measuring erosion and sediment yields on slopes and in small catchments for soil and water conservation; and
5. Application of sediment data in controlling sediment-related ecological problems.

Two well-known experts in the field of erosion and sedimentation (Prof. Des. Walling and Prof. Manfred Spreafico) will serve as Chairpersons to chair the discussion sessions

PROGRAM

Five days, July 5-9, 2021, two hours for each day, with an additional 40 minutes on the final day. The core time slots are:

- Coordinated Universal Time(UTC): 8:00-10:00
- Central European Time (CET): 9:00-11:00
- Eastern European Time (EET), Central/Western Africa Time (CAT&WAT): 10:00-12:00
- China Standard Time (CCT): 16:00-18:00

Chairpersons: Prof. Des. Walling and Prof. Manfred Spreafico
Technical Supporters: Prof. Cheng Liu and Prof. Gaohu Sun

Day 1: Welcome; Lecture-1; Collecting sediment data for studying sediment-based ecological problems (Prof. Dr. Mengzhen XU)
Day 2: Lecture-2; Sediment Measurement for the Three Gorges Project (Prof. Dr. Guanglei DUAN)
Day 3: Lecture-3; Online monitoring of suspended sediment at the Zhicheng Gauging Station on the Yangtze River (Dr. Dibing XU)
Day 4: Lecture-4; Field survey and monitoring methods for river flow, sediment transport and river beds in mountain regions (Dr. Zhiwei LI)
Day 5: Lecture-5; Measuring erosion and sediment yields on slopes and in small catchments (Prof. Dr. Baoyuan LIU) ;
Perspective Lecture; Measurement and monitoring techniques concerning suspended load and bedload (Prof. Helmut Habersack); Closing.

PARTICIPANTS

The total number of registered trainee participants will be approximately 30. These participants will have to register (no fees) by submitting an application indicating their interest in attending the Training Workshop. The organizers might need to select potential participants based on their background.

Participants who have an interest in some the lectures to be presented at the Online Training Workshop are welcome to attend those parts of the Workshop without formal registration. They will not be eligible to participate in the discussion sessions.
Instructions for accessing the online programme will be posted on ISI website (http://www.irtces.org/isi/).

INFORMATION FOR PARTICIPANTS:

Language: All activities of the Training Workshop will be undertaken in English.

Background of Participants: The Training Workshop has been designed for, and is open to, young engineers, scientists and managers, who are based in developing countries and working in fields such as river basin/reservoir management, water and soil conservation, sediment management and control etc. and who wish to improve their knowledge and understanding of fluvial sediment measurement and monitoring.

Benefits for Participants: Access to sessions, and provision of training materials (PPT, lecture notes, access to online video). An attendance certificate issued by UNESCO Beijing Office and IRTCES will be provided to all registered participants who have participated fully in the online training workshop and have returned a completed evaluation questionnaire after the workshop

Interested participants should submit an application to attend the Workshop using the enclosed form.

APPLICATIONS SHOULD REACH THE COURSE ORGANIZER (1), WITH A COPY TO THE UNESCO OFFICE BEIJING (2) BY JUNE 18, 2021.

(1) Ms. Qi XIAO
IRTCES
P.O. Box 366,
No.20 Chegongzhuang West Rd.,
Beijing, 100048, P. R. China
Tel: +86-10-68786410, Fax: +86-10-68411174,
Email: luoboxq@outlook.com

(2) Ms. Han WANG
Assistant Programme Coordinator, Natural Science Sector,
UNESCO Office Beijing
Waijiaogongyu 5-15-3, Jianguomenwai Compound
Beijing 100600, P. R. China
Tel.: +86 (10) 6532 2828 Ext 116, Fax: +86 (10) 6532 4854
Email: ha.wang@unesco.org

ISI Online Training Workshop on Sediment Transport Measurement and Monitoring (July 5-9, 2021)

REGISTRATION FORM

Name		Gender (M /F)	
Age		Country	
Email		Nationality	
Position/Affiliation			
Educational Qualification			
Previous knowledge of sediment transport measurement and monitoring			
Motivation for attending the Training Workshop and likely future relevance of the training provided.			

Please fill and return the form to Ms. Qi XIAO (luoboxq@outlook.com) with a copy to Ms. Han WANG (ha.wang@unesco.org) by June 18, 2021.

CHAIRPERSONS/LECTURERS

Prof. Manfred Spreafico

Chairman, International Sediment Initiative – IHP – UNESCO (ISI)
Professor
Institute of Geography
University of Berne
Switzerland

Prof. Des. Walling

ISI Advisory Group
Past President of World Association for Sedimentation and Erosion Research (WASER)
Emeritus Professor
Department of Geography, University of Exeter
UK

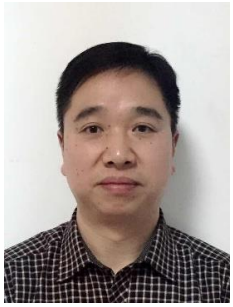
Prof. Baoyuan LIU

Prof. Dr. Baoyuan Liu, School of Geography, Beijing Normal University. His research fields include soil erosion process and modeling, soil erosion monitoring, and on-site and

off-site soil erosion risk assessment. So far, he has published more than 100 research papers with a *h* index of 38, and all the publications have been cited nearly 6000 times. Dr. Liu received his Doctoral degree in Soil Science from the Institute of Soil and Water Conservation, Chinese Academy of Sciences in 1990, and visited the National Soil Erosion Research Lab in Purdue University as a post-Doc during 1993-1996. He was appointed as the Director of the State Key Laboratory of Soil Erosion and Dryland Farming on the Loess Plateau in 2016, Northwest A&F University, Chinese Academy of Sciences. Since 2018, Dr. Liu has served as an Associate Editor of CATENA. Dr. Liu's major academic contributions and awards include: (1) Developed the Chinese Soil Loss Equation (CSLE) by parameterizing the gradient factor of steep slopes and other soil conservation factors. The CSLE has proved to be more accurate and practical for use in China than the Universal Soil Loss Equation (USLE). (2) Organized the National Soil Erosion Survey during 2010-2012 and applied the CSLE to produce the first water erosion intensity map of China. (3) Developed standard protocols for soil loss measurement at plot and watershed scale, for which he awarded the status of National Outstanding Researcher. (4) Calibrated and validated the runoff parameters in WEPP for which he received an award from the US Department of Agriculture.

Prof. Guanglei DUAN

Professor and Director, Jingjiang Bureau of Hydrology and Water Resources, Survey, Bureau of Hydrology, Changjiang Water Resources Commission. Ph.D. in Hydraulics and River Dynamics. He is a member of the World Association for Sedimentation and Erosion Research (WASER) and the Chinese Society of Surveying and Mapping. He has won one Second Prize for Science and Technology Progress awarded by the Ministry of Education, two First Prizes for Science and Technology Progress awarded by the Changjiang Water Resources Commission, one First Prize for Outstanding Surveying and Mapping Project awarded by Hubei Province, one First Prize for Science and Technology Progress awarded by the Water Conservancy and Hydropower Authority of Hunan Province, and has been recognized as an Advanced Individual in Sediment Research for the Three Gorges Project. He has published more than 40 papers in international or domestic journal and symposium proceedings and one monograph, he has participated in editing three monographs, and one water conservancy code and he has obtained two national invention patents and three utility model patents. He has 30 years of experience working on sediment transport measurement and monitoring.



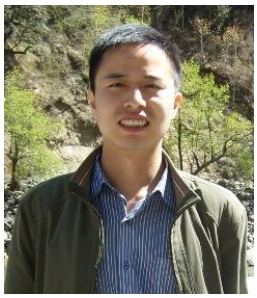
Mr. Dibing XU

Senior Engineer, Deputy Director-General and Chief Engineer, Jingjiang Bureau of Hydrology and Water Resources Survey, Bureau of Hydrology, Changjiang Water Resources Commission. Chief Expert of Bureau of Hydrology. He is mainly engaged in hydrology and water resources monitoring, hydrology and sediment basic research, hydrologic emergency monitoring, and automation and informatization of hydrologic measurement and monitoring. He has participated in the planning and implementation of hydrological and sediment observation schemes for both domestic and foreign engineering projects, as the person chiefly in charge. He has participated in writing technical standards such as the *Specification for hydrological tour gauging*, and *Supplementary technical provisions for hydrometry*, etc. He has been working on sediment transport measurement and monitoring for nearly 30 years and is a specialist in online monitoring of suspended sediment in rivers.

Dr. Mengzhen XU

Dr. Mengzhen Xu is currently the Director of the River Research Institute, Tsinghua University. She holds a Doctoral degree in Hydraulic Engineering (Tsinghua University) awarded in 2012. After two years as a scientific researcher in the Norwegian Water Resources and Energy Directorate, Oslo, Norway, working on the impact of climate change on sediment transport in rivers, she was appointed as an Assistant Professor in the Department of Hydraulic Engineering, Tsinghua University. She was promoted as Associate Professor in 2017 and at the same time was nominated as the Director of the River research Institute. She has served is an Executive Committee Member in the International Association for Hydro-Environment Engineering and Research China (Mainland) Chapter (IAHR China) since 2017, and as a Board Member of the IAHR Committees on River, Coastal, and Estuarine Morphodynamics (RCEM), and Ecohydraulics since 2018. Her research projects cover a wide range of topics in eco-hydraulics, eco-sedimentation, and geomorphology, such as landscape evolution and

natural hazards, channel stability and morphology, stream ecology, fish migration and cavefish conversation, the interaction between river dynamics and aquatic ecosystems, hydraulic engineering and mussel invasion and its control etc. Field observation and model development have been very important components of her research, with considerable experimental flume work used to complement field data. She has published more than 70 peer-reviewed papers in international journals and conference proceedings, and Chinese journals, and co-authored two English monographs and two Chinese monographs.



Dr. Zhiwei LI

Associate Professor, School of Water Resources and Hydropower Engineering, Wuhan University, China. He received his Ph.D. in River Mechanics from Tsinghua University, China, in 2014. His current interests focus on fluvial morphodynamics and the ecogeomorphology of meandering and braided rivers on the Qinghai-Tibet Plateau, fluvial processes in the middle and lower Yangtze River, and wetland ecohydrology and riverine carbon dynamics in the Zoige Basin. He has twelve-years of field experience during the period 2010-2021 working on the Qinghai-Tibet Plateau, in areas such as the Source Regions of the Yellow, Yangtze, Lancang, Nujiang, Yarlung Tsangpo, Indus, and Tarim Rivers.

Prof. Helmut Habersack

ISI Expert Group
Vice President of World Association for Sedimentation and Erosion Research (WASER)
Head of Christian Doppler Laboratory for Advanced Methods in River Monitoring, Modelling and Engineering
Head of IWHW -Institute of Water Management, Hydrology and Hydraulic Engineering
WAU - Department of Water, Atmosphere and Environment
BOKU - University of Natural Resources and Life Sciences, Vienna, Austria.