Technical Committee on Experimental Methods and Instrumentation

Activities of the Year 2024

Including but not limited to conferences, webinars, publications, TC/WG meetings, elections, participation in international processes, etc. Some examples below:

W.A.T.E.R. Summer School – 8th edition, Workshop on Advanced measurement Techniques and Experimental Research, International Summer School on Hydraulics Measurement Techniques

July 1-5, 2024. Strasburg, France.

The ICube laboratory of Strasbourg hosted the 8th edition of the W.A.T.E.R. Summer School, co-organised with Ubertone and the IAHR committee on Experimental Methods and Instrumentation. W.A.T.E.R. Summer School aims to train postgraduate students (doctoral students), researchers, and practitioners who already have a specific knowledge and skill level in fluid mechanics but seek advanced training in state-of-the-art measurement techniques.

The Local Organizing Committee led by Dr Anne Pallarès and Marie Burckbuchler kept the tradition of providing rich and high-quality scientific programs. The W.A.T.E.R. Summer School used a classroom and the hall of the ENGEES school, as well as various laboratory facilities of ICube and INSA Strasbourg laboratories for parallel hands-on sessions.

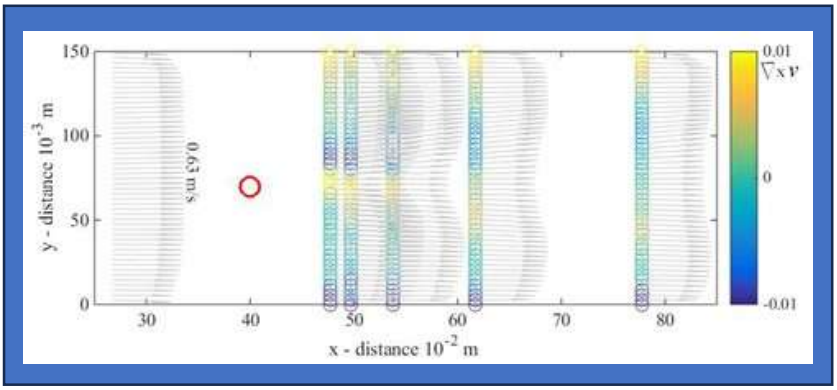
https://www.iahr.org/link_to_this_event.html

IAHR YPN Challenge – 4th edition

March – May 2024.

EMI supported the YPN Challenge fourth edition. Participants explored a laboratory database acquired with an Ultrasound Velocity Profiler (UVP) in the wake of a cylinder. UVP is a well-consolidated ultrasound measurement technique employed in a large range of environmental and industrial applications ensuring flow velocity profiling where optical access is not possible and in turbid fluids (e.g., river flow). The objective was to carry out an analysis of the mean velocity field and its deviations over time around a simple obstacle to the flow (i.e. a cylinder) based on an existing UVP database.

Massimo Guerrero technically mentored participants in developing their work.



https://www.iahr.org/index/detail/1220

Online School on Lateral Cavity – Hybrid and multi Lab study of the flow patterns in a Lateral Cavity

February – March 2024.

This online course was organised by an IAHR cross committees action group – Committees on Fluid Mechanics, Experimental Methods and Instrumentation and Fluvial Hydraulics. This was an opportunity to join a team dedicated to enhance knowledge on open-channel fluid mechanics, use of advanced tools, instrumentation and numerical modelling, and analysing results in depth.

Rui Ferreria technically mentored participants in developing their work regarding PIV data.

https://www.iahr.org/index/detail/1204

Activities of Future Years

Including but not limited to conferences, webinars, publications, TC/WG meetings, elections, participation in international processes, etc.

W.A.T.E.R. Summer School – 9th edition, Workshop on Advanced measurement Techniques and Experimental Research, International Summer School on Hydraulics Measurement Techniques

September 1-5, 2025. Gdansk, Poland.

The W.A.T.E.R. (Workshop on Advanced measurement Techniques and Experimental Research) Summer School will take place in the Institute of Hydro-Engineering of the Polish Academy of Sciences, in Gdansk, Poland from 1 to 5 September 2025 in collaboration with the Vrije Universiteit Brussel (Belgium).

The W.A.T.E.R. Summer School is an annual, hands-on training event focusing on advanced measurement techniques in hydraulics and fluid mechanics. It is aimed at PhD candidates, researchers, and professionals seeking in-depth knowledge of state-of-the-art measurement methods. It is organized under the auspices of the Experimental Methods and Instrumentation committee of the IAHR.

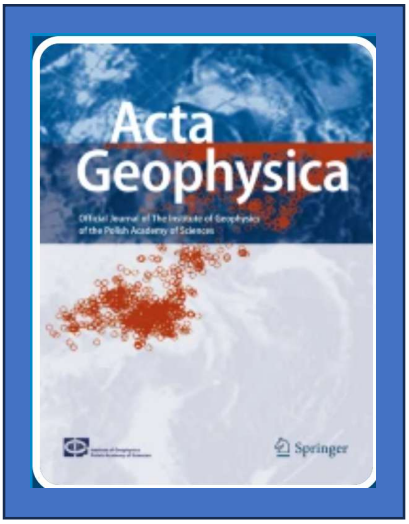
Each edition emphasizes practical experience with measurement techniques such as Acoustic Doppler methods (e.g., UVP and ADVP) and Optical methods (e.g., Particle Image Velocimetry and Particle Tracking Velocimetry), applied to hydraulics problems both in the laboratory and in the field.

https://watersummerschool.wordpress.com/

Recent advances in turbulence and transport measurements and instrumentation in earth surface sciences and hydro-environment engineering

This new special journal session, to be published in Springer's journal Acta Geophysica, offers a unique platform to explore the latest advancements in the tools and methods used for gaining a better understanding of flow turbulence and its impact on transport phenomena, in the context of geosciences and hydraulic engineering.

This session provides an opportunity for academic researchers and industry experts to present cutting-edge research on the development and innovative application of instrumentation, such as lasers, acoustics, and ultrasonics, for measuring and analyzing turbulence and dynamical transport processes, at unprecedented spatiotemporal resolution. By bringing together contributions from diverse areas, the session aims to promote the visibility of valuable research in this critical field and advance knowledge at the forefront of turbulence and transport measurement tools and methods. This session is led by EMI and is planned to be open up to 15 October 2025.



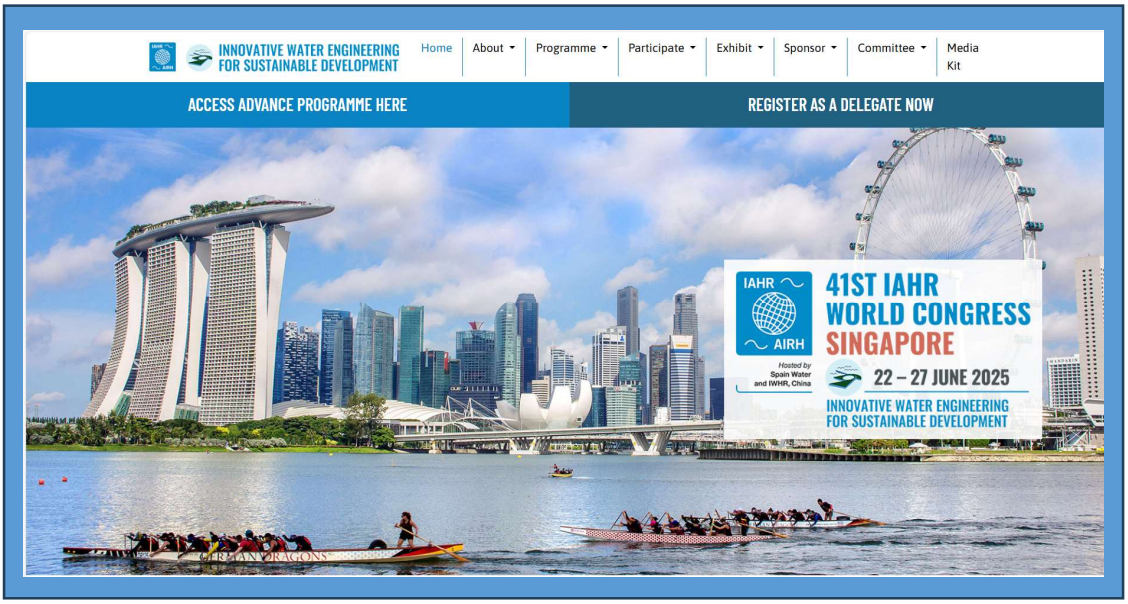
https://link.springer.com/collections/fidjjfaeae

Special Session at 41th IAHR World Congress: Surrogate techniques for monitoring sediment transport in fluvial and transitional systems

June 22-27, 2025. Singapore.

The proposed session aims to present and discuss the most recent results and experiences achieved by advanced surrogate techniques, such as optical, acoustic and imaging methods.

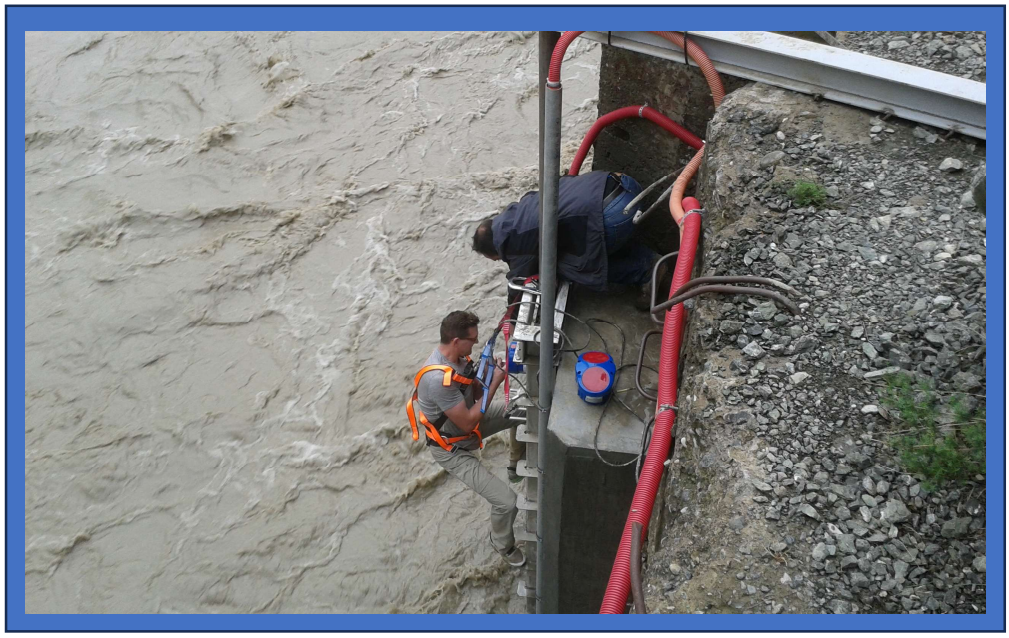
This Special Session invites contributions that address advanced and novel aspects of measuring sediment transport in rivers and transitional areas using surrogate techniques (e.g., acoustic, optical, imaging, remote sensing). Contributions may cover a variety of topics ranging from field and laboratory studies towards the understanding of fundamental processes, the validation of surrogate methods and the assessment of novel devices, methodology and data analysis performance. Seven contributes were collected.



https://2025.iahr.org/Home/Programme/session-32

SEDIMENT FLUXES INVESTIGATION BY MEANS OF THE ACOUSTIC DOPPLER CURRENT PROFILER (ADCP)

EMI will contribute to IAHR Water Monograph Series. A proposed Monograph focuses on use of the Acoustic Doppler Current Profiler, ADCP, to measure sediment fluxes in rivers. ADCPs are used routinely to measure water flow velocity, depth, and discharge. The monograph will review methods developed in the last 20-30 years to analyze the ADCP backscatter ultrasound signal to yield indirect estimates suspended and bedload sediment transport. This proposal is led by Guerrero M. and will gather relevant contributes from Conevski S., Haught D.R., Rennie C., Ruther N. and Venditti J.



https://www.iahr.org/index/detail/659