SiP
Cross-ministerial Strategic Innovation Promotion Program

Join us for

INTERNATIONAL

SEMINAR

ON

Development of a Resilient Smart Network System against Natural Disasters

Monday August 25th

9:30-12:30

Collaborative Research Hub, DPRI, Kyoto University
Uji Campus, Gokasho, Uji-shi,
Kyoto, 611-0011

Invited Speakers

Prof. Philippe Gourbesville
President, IAHR

Dean B. Durkee, PhD., P.E.
Honorary Vice President, ICOLD

A dynamic seminar that explores the latest innovations in water and disaster risk management!

This session will feature global experts and researchers sharing new insights into the use of digital technologies, risk analysis, climate data, and smart dam operations. Together, we will look at how these approaches are helping improve decision-making, strengthen resilience, and adapt to the growing challenges of climate-related disasters.

PROGRAM

Monday August 25th
9:30-12:30

Collaborative Research Hub, DPRI, Kyoto University

09:00- Reception

09:30 Opening Remarks

09:40 Digital Twins in water sector: soon on vacations?
Professor Philippe Gourbesville *President, IAHR*

10:20 Application of Risk Analysis to Support Risk Informed Decision Making
Dean B. Durkee, Ph.D., P.E. *Honorary Vice President, ICOLD*

11:00 Coffee Break

11:20 Advancing flood risk management with ensemble climate data and large-domain hydrologic modeling
Professor Takahiro Sayama *DPRI, Kyoto University*

11:50 Smart Dam Operation for Resilient Water Management in the Philippines and Vietnam
Professor Sameh Kantoush *DPRI, Kyoto University*

12:20 Closing Remarks

Professor Philippe Gourbesville

President, IAHR

President of the International Association for Hydro-Environment Engineering and Research (IAHR, 2023–2027) and Professor of Hydroinformatics at Polytech Nice Sophia, Université Côte d'Azur, France.

After earning his Ph.D. from Louis Pasteur University in 1993, he began his career as a hydraulic engineer, working on international projects across Europe, Africa, and Asia.

Since joining Université Côte d'Azur, he has led numerous hydro-environmental modelling projects, including 16 funded by the European Commission. He also helped establish the Tianjin International Engineering Institute (TIEI) in China, serving as its French director. Prof. Gourbesville regularly advises international organizations on water-related issues and is Vice President of the Asian Water Council.

Digital Twins in water sector: soon on vacations?

Over the past 5 years, the concept of Digital Twin has massively flooded the water sector and propagated in numerous water services. Digital twins are dynamic, virtual representations of physical systems that integrate real-time data, modelling, and simulations to monitor and predict system behavior. Within hydro-environmental applications, digital twins offer powerful tools to better understand, monitor, and manage complex water systems. By combining sensor data, simulation models, and advanced analytics using AI and machine learning, digital twins enable continuous system overview, predictive insights, scenario testing. This capability supports water and flood management by improving operational efficiency, informing long-term planning, and enhancing responses to environmental changes and extreme events. Examples of digital twin applications within the hydro-environmental sector include digital twins of river basins for early warning of floods and droughts and disaster preparedness will be provided. At the same time, the efficiency and the added value of the Digital Twins must be questioned. How far the deployment of these tools will impact water engineering activities and contribute to the development of efficient solutions for water management, The presentation will review the concept, address limits and identify added value through various examples.

Dean B. Durkee, PhD., P.E.

Honorary Vice President, ICOLD

Vice President of the International Commission on Large Dams (ICOLD, 2022–2025).

He formerly served as President of the U.S. Society on Dams (USSD) and is a senior dam safety engineer at Gannett Fleming, Inc. with over 30 years of experience in the design, evaluation, and rehabilitation of various dam types for hydroelectric, flood control, and water supply purposes.

Dr. Durkee is FERC-approved as both a Part 12D Independent Consultant and a Risk Analysis Facilitator. For the past two decades, he has specialized in failure mode evaluation and risk-based dam safety, contributing to several of FERC's Risk Informed Decision Making (RIDM) pilot projects.

Application of Risk Analysis to Support Risk Informed Decision Making.

In response to a number of dam failures over the past decade, the hydropower industry in the United States and the mining industry worldwide have moved to incorporate Risk Informed Decision Making (RIDM) into Dam Safety Management Practice. While risk informed approaches for managing dams is not new, it is not widely utilized by much of the dam safety community. The presentation focus' on challenges for practicing engineers and dam owners who are often not well versed in the application of risk analysis methodologies, and will provide an overview of the RIDM process and examples of how it is applied to dams.