



International Hydrological Programme

Integrated Basin Management under Changing Climate

The 32nd IHP Training Course

28th November – 8th December, 2022

Kyoto, Japan

Water Resources Research Center, Disaster Prevention Research Institute,
Kyoto University

Institute for Space-Earth Environmental Research, Nagoya University



Outline

The Online Training Course (OTC) on integrated basin management strategies, which aims to present, via the internet, aspects of water resources and water-related disasters under climate change for participants from Asia-Pacific regions as a part of Japanese contribution to the UNESCO International Hydrological Programme (IHP). The OTC consists of a series of lectures, exercises including self-paced practicing of various software and virtual field visit for the target river basin. The OTC is organized by the Water Resources Research Center (WRRC) of Disaster Prevention Research Institute (DPRI), Kyoto University from 28th November – 8th December, 2022.

Objectives

The online training course is oriented to the study of integrated basin management: hydrological extreme analysis, hydrological measurements, assessing the impacts of climate change, rainfall-runoff-inundation modelling, reservoir sustainability, optimum operation and management, as well as knowledge of the interrelationship with river ecosystem and environment. Development of resilient society has become an inevitable issue under the recent climate change that is increasing the frequency of extreme phenomena such as unprecedented floods and severe droughts. In order to make our society more resilient for such unprecedented extremes, social adaptation and countermeasure are required based on technologies for prediction and vulnerability assessments to meet the requirements of future water availability under changing climate.

In light of the Focal Area 1.1 “Risk management as adaptation to global change” and 1.2 “Understanding coupled human and natural processes” under the Theme 1 “Water-related disasters under hydrological change” of the IHP-VIII, and also to put forward the IHP-IX’s mission related to capacity building, the 32nd IHP OTC - Kyoto will give an opportunity for participants: 1) to acquire the latest knowledge on climate change impacts on water resources, water and weather-related disasters, hydrological measurements of large river basins and ecosystem services, 2) to make a practice on rainfall-runoff-inundation analysis at river basin scale, and 3) to discuss effective strategies of integrated basin management based on scientific knowledge to realize a resilient society under climate change.

Outcomes

It is expected that participants will comprehend the following:

- The basics of hydrology, climatology and water management.
- The challenges of water resources under the impact of climate change as well as river ecosystem and environment.
- The fundamental of rainfall runoff modeling, statistical and numerical approaches.
- The application of the advanced models and approaches on land surface process, rainfall runoff modeling, extreme analysis, downscaling and reservoir management.
- Fostering of the collaborative networking between the participants and Kyoto University’s Professors.

Dates: 28th November – 8th December, 2022

Conveners

Convener: Tomoharu HORI (DPRI, Kyoto University)

Coordinator: Mohamed SABER (DPRI, Kyoto University)

Secretary: OBARA, Hisae (DPRI, Kyoto University), IBARAKI, Junko (DPRI, Kyoto University)

Lecturers

HORI, Tomoharu	(DPRI, Kyoto University)
ICHIKAWA, Yutaka	(Graduate School of Engineering, Kyoto University)
KANTOUSH, Sameh A.	(DPRI, Kyoto University)
KIM, Sunmin	(Graduate School of Engineering, Kyoto University)
NAKAKITA, Eiichi	(DPRI, Kyoto University)
SAYAMA, Takahiro	(DPRI, Kyoto University)
SUMI, Tetsuya	(DPRI, Kyoto University)
TACHIKAWA, Yasuto	(Graduate School of Engineering, Kyoto University)
TAKARA, Kaoru	(Graduate School of Advanced Integrated Studies in Human Survivability, Kyoto University)
TAKEMON, Yasuhiro	(DPRI, Kyoto University)
TANAKA, Kenji	(DPRI, Kyoto University)
YAMADA, Masafumi	(DPRI, Kyoto University)
YOROZU, Kazuaki	(Graduate School of Engineering, Kyoto University)

Online Lectures

Lecture 1 Fundamentals of basin-scale hydrological analysis	Y. Ichikawa
Lecture 2 Hydrological measurements of large river basins	S. A. Kantoush
Lecture 3 Resilient society development under changing climate	K. Takara
Lecture 4 Fundamentals of rainfall-runoff-inundation modelling	T. Sayama
Lecture 5 Fundamentals of land-surface processes	K. Tanaka
Lecture 6 Integrated sediment management for reservoir sustainability	T. Sumi
Lecture 7 Management of river ecosystem under changing climate	Y. Takemon
Lecture 8 Climate change impact assessment on disaster environments	E. Nakakita
Lecture 9 UNESCO-IHP and climate change adaptation strategy in Asia	Y. Tachikawa
Lecture 10 Fundamentals of optimum operation of reservoir systems	T. Hori

Online Exercises

Exercise 1-1, 1-2, 1-3 Rainfall-runoff-inundation modelling	T. Sayama
Exercise 2-1, 2-2 Processing method of meteorological and geographical data	K. Tanaka & K. Yorozu
Exercise 3 Statistical downscaling of GCM data	S. Kim
Exercise 4 Self-paced practicing of RRI and modelling the target river basin	Trainees
Exercise 5 Follow-up of Exercises with Q & A session	M. Yamada
Exercise 6 Follow-up of Exercises with Q & A session	T. Hori, K. Tanaka, S. Kim & T. Sayama
Exercise 7 Optimum operation of reservoir systems	T. Hori
Exercise 8 Follow-up of Exercises with Q & A session	T. Hori, K. Tanaka, S. Kim & T. Sayama

Virtual/Self-Guided Field Visits

Due to current pandemic situation worldwide, the virtual or self-guided field visits are applied. Please

select the target river basin for your case study and required presentations.

Examples:

- 1- River Basin nearby your **current residential area**;
- 2- River Basin within your **home country**;
- 3- River Basin **worldwide** based on your interest.

Requirements

IHP-Training course participants should be graduate students or Engineers with reasonably proficient in English to understand lectures. Several software's such as MobaXterm, Image Magick, Fortran compiler or gfortran, OpenGrADS, R should be setup in your laptop/PC before the training. Moreover, trainees should be familiar with the selected target river basin in their region.

Registration

You are kindly requested to submit the registration form not later than Oct.28th. At:

https://docs.google.com/forms/d/e/1FAIpQLSdB-f-IJgisaW1eom3V-4VPmWj_m-q_0Z7gHgNaH9EpA01Y7A/viewform

If you have any question about registration, please contact Dr. Mohamed SABER, chief assistant of this course by e-mail (mohamedmd.saber.3u@kyoto-u.ac.jp). We are looking forward to seeing you in the course.

Notice: IF the registrants are more than the expected number, some screening selection will be conducted

Oral presentations and talks by trainees

As described in the program all trainees will be asked to provide various oral presentations and talks:

- 1- Self-introduction and country report (28th November, 2022)
- 2- Report presentation related to your selected case study of target river basin (8th December 2022)
- 3- Talks during the closing ceremony and awarding of IHP-TC certificate of completion

Training course materials

The training course materials will be available on our website (<http://wrrc.dpri.kyoto-u.ac.jp/IHPkyototraining.html>) in due course. The trainees are requested to download them in advance for preparation for the training course.

Instructions

After receiving your registration form, we will announce Zoom ID to access the online IHP-TC lectures and exercises. We will have a trial online session one day before the official start. If you have any questions and concerns, please feel free to contact us. We are looking forward to seeing you soon.

(Last updated on 20th October, 2022)