



International Hydrological Programme

## **Integrated Basin Management under Changing Climate**

The Twenty-eighth IHP Training Course

28<sup>th</sup> November– 7<sup>th</sup> December, 2018

Kyoto, Japan

Water Resources Research Center, Disaster Prevention Research Institute,  
Kyoto University  
Institute for Space-Earth Environmental Research, Nagoya University



## **Outline**

UNESCO's 10-day training course for young researchers from Asia-Pacific region on integrated river basin management strategies including aspects of water resources, water related disasters under climate change is a part of Japanese contribution to the International Hydrological Program (IHP). The course includes series of lectures covering various aspects of water resources management, modelling practices, field exercise and technical tours. The course will be held in the Disaster Prevention Research Institute (DPRI), Kyoto University during 28th November to 7th December 2018.

## **Objectives**

Development of resilient society has become an inevitable issue under the climate change, which impacted in increasing the frequency of extreme phenomena such as unprecedented flood and severe drought. In order to make our society more resilient, social adaptation to the hazards and countermeasures for disasters should be based on technologies for prediction and assessment on the future conditions of water resources.

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, the 28<sup>th</sup> IHP training course is focused on following three objectives: 1) to acquire the latest knowledge on climate change impacts on water resources, water related disasters and ecosystem services, 2) to make practice on rainfall-runoff-inundation estimation at river basin scale, and 3) to discuss strategies of integrated basin management to realize resilient society under climate change.

**Dates**        28<sup>th</sup> November– 7<sup>th</sup> December, 2018

**Venue**        DPRI, Kyoto University, Uji, Kyoto, Japan

## **Conveners**

Convener: TANAKA, Shigenobu (DPRI, Kyoto University)

Chief assistant: TANAKA, Kenji (DPRI, Kyoto University)

Secretary: KAWASAKI, Yuko (DPRI, Kyoto University)

## **Lecturers**

HORI, Tomoharu (DPRI, Kyoto University)

ICHIKAWA, Yutaka (Graduate School of Engineering, Kyoto University)

KIM, Sunmin (Graduate School of Engineering, Kyoto University)

KOBAYASHI Sohei (DPRI, Kyoto University)

NAKAKITA, Eiichi (DPRI, Kyoto University)

NOHARA, Daisuke (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)  
 TANAKA, Shigenobu (DPRI, Kyoto University)  
 YOROZU, Kazuaki(Graduate School of Engineering, Kyoto University)

### **Lectures at the Seminar Room (S217D) of DPRI, Kyoto University**

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

### **Indoor practices at the Seminar Room (S217D) of DPRI, Kyoto University**

Exercise 1	Processing method of geographical and meteorological data	K. Tanaka & K. Yorozu
Exercise 2	Downscaling of GCM data	S. Kim
Exercise 3	Rainfall-runoff-inundation modelling	T. Sayama
Exercise 4	Follow-up of exercise 1 to 3	K. Tanaka, S. Kim & T. Sayama
Exercise 5	Hydrological extreme analysis	S. Tanaka
Exercise 7	Optimum operation of reservoir systems	D. Nohara
Exercise 9	Follow-up of exercise 1,2,3,7	K. Tanaka, S. Kim, T. Sayama & D. Nohara

### **Model experiment**

Exercise 8	Reservoir operation & sediment transport experiment	K. Tanaka & D. Nohara
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### **Field practices and Technical visits**

Exercise 6	River bed survey and habitat evaluation at the Kizu River	Y. Takemon & S. Kobayashi
Technical visit 1	To the Lake Biwa and the Uji River	Y. Takemon & S. Kobayashi
Technical visit 2	To the Ujigawa Open Laboratory	Y. Takemon & S. Kobayashi

### **Training course documents**

The training course documents will be available on our website in due course. The participants are requested to download them in advance as a preparation to the lectures of the training course.

## Program

Date		Time	Contents	Lecturers
28-Nov	Wed	9:00-10:30	Registration & Guidance & Self introduction and country report	K. Tanaka
		11:00-12:30	Lecture 1 Fundamentals of land surface processes	K. Tanaka
		13:30-15:00	Exercise 1 Processing method of geographical and meteorological data	K. Tanaka
		15:30-17:00		K. Yorozu
29-Nov	Thu	9:00-12:00	Exercise 2 Downscaling of GCM data	S. Kim
		13:30-15:00	Lecture 2 Fundamentals of basin-scale hydrological analysis	Y. Ichikawa
		15:30-17:00	Lecture 3 Integrated sediment management for reservoir sustainability	T. Sumi
30-Nov	Fri	9:00-10:30	Lecture 4 Fundamentals of rainfall-runoff-inundation modelling	T. Sayama
		11:00-12:30	Lecture 5 Climate change impact assessment on disaster environments	E. Nakakita
		13:30-15:00	Exercise 3 Rainfall-runoff-inundation modelling	T. Sayama
		15:30-17:00		
1-Dec	Sat	9:00-10:30	Exercise 4 Follow-up of exercise 1 to 3	K. Tanaka S. Kim T. Sayama
		11:00-12:30		
		13:30-15:00		
		15:30-17:00		
2-Dec	Sun	All day	Technical visits and cultural exchange at the Kamo River and the Biwako Canal	students
3-Dec	Mon	9:00-10:30	Lecture 6 Resilient society development under changing climate	K. Takara
		11:00-12:30	Lecture 7 UNESCO-IHP and Climate change adaptation strategy in Asia	Y. Tachikawa
		13:30-15:00	Lecture 8 Fundamentals of hydrological extreme analysis	S. Tanaka
		15:30-17:00	Exercise 5 Hydrological extreme analysis	S. Tanaka
4-Dec	Tue	9:00-10:00	Lecture 9 Fundamentals of river ecosystem	Y. Takemon
		10:00-18:00	Technical visit 1 to the Lake Biwa and the Uji River	Y. Takemon S. Kobayashi
5-Dec	Wed	10:00-12:00	Technical visit 2 to the Ujigawa Open Laboratory	Y. Takemon S. Kobayashi
		Afternoon	Exercise 6 River bed survey and habitat evaluation at the Kizu River	
6-Dec	Thu	9:00-10:30	Lecture 10 Fundamentals of optimum operation of reservoir systems	T. Hori
		11:00-12:30	Exercise 7 Optimum operation of reservoir systems	D. Nohara
		13:30-15:00	Exercise 8 Reservoir operation & sediment transport experiment	D. Nohara K. Tanaka
		15:30-17:00		
7-Dec	Fri	9:00-10:30	Exercise 9 Follow-up of exercise 1, 2, 3, 7	K. Tanaka, T. Sayama, S. Kim, D. Nohara
		11:00-12:30		
		13:30-15:30	Report presentation by each participant	S. Tanaka
		16:00-17:00	Completion ceremony	K. Tanaka