



International Hydrological Programme

## **Introduction to River Basin Environment Assessment under Climate Change**

The Twenty-first IHP Training Course

28 November - 9 December, 2011

Kyoto, Japan

Water Resources Research Center, Disaster Prevention Research Institute, Kyoto  
University  
Hydrospheric Atmospheric Research Center, Nagoya University

Supported by  
Disaster Prevention Research Institute, Kyoto University  
Global Center for Education and Research on Human Security Engineering for  
Asian Megacities, Kyoto University  
Global Center for Education and Research on Sustainability Science for Resilient  
Society Adaptable to Extreme Weather Conditions, Kyoto University



## **Outline**

A short training course on river basin environment assessment under climate changes will be programmed for participants from Asia-Pacific regions as a part of Japanese contribution to the International Hydrological Program (IHP). The course composed of a series of lectures and practice sessions and field surveys along the Kamo River will be held mainly at the Disaster Prevention Research Institute (DPRI), Kyoto University during the two weeks from 28 November to 9 December 2011.

## **Objectives**

It is obvious that climate changes in recent decades influences the hydrological behaviour and its corresponding environments in river basins. Thus, a numerical evaluation based on the model accurately expressing natural reactions is necessary. In simulating the river basin environments subject to past, present and future climate changes, we need to have an indisputable and integrated model incorporating some eco-hydrological/eco-hydraulic and hydro-chemical processes into hydrological/hydrometeorological ones. We have to immediately consider the full impacts of climate changes on river basin environments to conduct the river basin management. The above full impact is quite difficult to grasp because the actual system of river basin environments is too complicated to build up the accurate models of coupling reactions among hydrological, environmental and ecological events. We can, nevertheless, model and simulate the individual component models as a numerical system. A numerical simulation using appropriate modelling for hydrological, environmental and ecological behaviour under climate changes is a powerful, useful and helpful approach to grasp a spatiotemporal distribution of water resources, environmental assessments and biomass.

The 21<sup>st</sup> IHP training course is focused on three major objectives: (1) to acquire the latest knowledge on hydrological and environmental assessment under climate changes at river basin scale in the Asia-Pacific region, (2) to make practice for selected topics on successful simulations to make use of the river basin environment assessment, and (3) to discuss the possibility to apply the river basin environment assessment into some hydrological and environmental managements.

## **Course Contents**

Convener: KOJIRI, Toshiharu (Disaster Prevention Research Institute, Kyoto University)

Chief assistant: HAMAGUCHI, Toshio (Disaster Prevention Research Institute, Kyoto University)

## **Lecturers**

HAMAGUCHI, Toshio

Disaster Prevention Research Institute, Kyoto University

ICHIKAWA, Yutaka

Dept. of Civil and Environmental Engineering, Yamanashi University

KAWAGUCHI, Tomoya

Nihon Suido Consultants, Co., Ltd.

KUZUHA, Yasuhisa

Graduate School of Bioresources, Mie University

SATO, Yoshinobu

Disaster Prevention Research Institute, Kyoto University

SHIIBA, Michiharu

Graduate School of Engineering, Kyoto University

TAKEMON, Yasuhiro

Disaster Prevention Research Institute, Kyoto University

TANAKA, Kenji

Disaster Prevention Research Institute, Kyoto University

TOKAI, Akihiro

Graduate School of Engineering, Osaka University

TSUJIMURA, Maki

Graduate School of Life and Environmental Sciences, University of Tsukuba

## **Lectures' contents at the Seminar Room of Obaku Plaza, Kyoto University**

(1-1) Overall concepts of basin-scaled hydrological processes

M. Shiiba

(1-2) Basin-scaled evapotranspiration processes

Y. Kuzuha

(1-3) Basin-scaled runoff processes

Y. Ichikawa

(1-4) Basin-scaled groundwater processes

M. Tsujimura

(1-5) Applied skills of remote sensing measurements on hydrological processes

K. Tanaka

(2-1) Basin-scaled chemical environment assessments

A. Tokai

(2-2) Basin-scaled ecological environment assessments

Y. Takemon

(2-3) Basin-scaled food-chain impact assessments

T. Kawaguchi

## Practices

(3-1) Exercises on runoff processes

Y. Sato

(3-2) Exercises on groundwater processes

T. Hamaguchi

(3-3) Exercises on remote sensing analyses

K. Tanaka

(3-4) Ecological field surveys

Y. Takemon

## Technical visits and field surveys

Uji River, Lake Biwa Canal Museum, Kamo River

### Schedule (28 November to 9 December, 2011)

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27 (Sunday)	Arrival at Kansai Airport and movement to Kyoto
28 (Monday)	Registration & Guidance (afternoon) Welcome party (evening)
29 (Tuesday)	Lecture 1-4 (morning) Lecture 1-2 (afternoon)
30 (Wednesday)	Exercise 3-2 (morning and afternoon)
1 (Thursday)	Lecture 1-3 (morning) Lecture 2-1 (afternoon)
2 (Friday)	Lecture 2-2 (morning) Lecture 2-3 (afternoon)
3 (Saturday)	Technical visits with students along the Uji River
4 (Sunday)	Technical visits with students at the Lake Biwa Canal Museum
5 (Monday)	Lecture 1-1 (morning) Lecture 1-5 (morning)
6 (Tuesday)	Exercise 3-1 (morning & afternoon)

7 (Wednesday)	Exercise 3-3 (morning & afternoon)
8 (Thursday)	Exercise 3-4 (morning & afternoon around the Kamo River)
9 (Friday)	Making a report (morning) Completion ceremony of this course (afternoon) Farewell party (evening)"
10 (Saturday)	Departure from Kansai Airport

### **Downloading the Textbook for Participants from the Net**

The textbook of “the 21st IHP Training Course”, which is converted in PDF style, will be prepared and available on the IHP Nagoya forum website [www.ihpnagoyaforum.org](http://www.ihpnagoyaforum.org). The participants are requested to download such PDF file from the website in advance as a preparation to the several lectures of the training course. The textbook should be constituted of contents (referred sentence bodies, figures, tables, pictures, equations and observed/calculated results) with authorized copyrights.

### **Web broadcasting the Lectures**

The lectures, with the exception of field trips, will be webcasted to some universities in Asia via the UNESCO Office Jakarta and with other technology through DPRI facilities. The slide materials will be distributed to the participants from the Net in advance. The materials are requested to be filtered out whenever copyrights apply in case of web broadcasting (part or whole slides will be masked out with digital treatments such as overlaying mosaic images or with black-out screening during web broadcasting).