United Nations Educational, Scientific and Cultural Organization

International Hydrological Programme

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International Hydrological Programme

Ecohydrology for River Basin Management under Climate Change

The Twenty-third IHP Training Course

2 - 13 December, 2013

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 Sustainability Science for Resilient Society Adaptable to Extreme Weather Conditions, Kyoto University

WRRC Kyoto University

HyARC Hydrospheric Atmospheric Research Center, Nagoya University

DPRI-KU

KYOTO UNIVERSITY ARS

Outline

A short training course on ecohydrology under climate change is programmed for participants from Asian-Pacific regions as a part of Japanese contribution to the International Hydrological Program (IHP). The course composed of a series of lectures, practice sessions, and field surveys along the Kizu River will be held mainly at Disaster Prevention Research Institute (DPRI), Kyoto University during the two weeks from 2 to 13 December 2013.

Objectives

Water is our most valuable natural resource. The availability and quality of fresh water not only impact human health and wellbeing, but also the functioning of essential ecosystems, including rivers, wetlands, lakes and coastal ecosystems. Without sound water resources management, human activities can upset the delicate balance between water resources and environmental sustainability.

Ecohydrology is an integrative science studying the relationships between hydrological and ecological processes in soils, rivers and lakes at the catchment scale. It deals with hydrological factors which determine the dynamics of natural and human-driven ecosystems, together with ecological factors which influence water dynamics and water quality. It proposes a "dual regulation" of a system by simultaneously studying ecological and hydrological processes to enhance the overall integrity of aquatic ecosystems in the face of human-driven alterations and Global Change. River basins have a hierarchical structure and natural boundaries, and can be considered as inherent integrators of the effects of many climatic and non-climatic factors. That is why river basins represent a suitable scale for integrated ecohydrological studies and modelling.

The 23rd IHP training course is focused on three major objectives: (1) to acquire the latest knowledge on hydrological and ecological assessment under climate changes at river basin scale, (2) to make practice for learning the methodologies for assessing the impact of climate change on hydrological and ecological processes, and (3) to discuss the possibility to include the hydrological and ecological responses to climate change into the water resources managements.

Course Contents

Convener: SUMI, Tetsuya (Disaster Prevention Research Institute, Kyoto University)

Chief assistant: TANAKA, Kenji (Disaster Prevention Research Institute, Kyoto University)

Lecturers

HAMAGUCHI, Toshio

Disaster Prevention Research Institute, Kyoto University

HORI, Tomoharu

Disaster Prevention Research Institute, Kyoto University

KAZAMA, So
Graduate School of Engineering, Tohoku University
KOBAYASHI, Sohei
Disaster Prevention Research Institute, Kyoto University
NAKAKITA, Eiichi
Disaster Prevention Research Institute, Kyoto University
NOHARA, Daisuke
Disaster Prevention Research Institute, Kyoto University
SAITO Osamu
United Nations University
SATO, Yoshinobu
Disaster Prevention Research Institute, Kyoto University
SUMI, Tetsuya
Disaster Prevention Research Institute, Kyoto University
SUTAPA, Ignasius D. A.
Asia Pacific Centre for Ecohydrology, UNESCO
SUZUKI, Yasushi
Japan Weather Association
TACHIKAWA, Yasuto
Graduate School of Engineering, Kyoto University
TAKEMON, Yasuhiro
Disaster Prevention Research Institute, Kyoto University
TANAKA, Kenji
Disaster Prevention Research Institute, Kyoto University
ZALEWSKI, Mariej
European Regional Centre for Ecohydrology, UNESCO

Lectures' contents at the Seminar Room (E517D) of DPRI, Kyoto University

Keynote 1	Overall concepts of Ecohydrology	S. Kazama
Keynote 2	Ecohydrology: process oriented thinking towards sustainable enhancement, water resources, biodiversity, ecosystem services and resilience to climate change	M. Zalewski
Lecture 1	Fundamentals of basin-scale hydrological processes	Y. Tachikawa
Lecture 2	Projected future meteorological environment	E. Nakakita
Lecture 3	Fundamentals of freshwater ecology	Y. Takemon
Lecture 4	Sustainable management of water resources in marginal area: Study case in Indonesia	Ignasius D. A. Sutapa

Lecture 5	Ecosystem Services	O. Saito
Lecture 6	Integrated sediment management	T. Sumi
Lecture 7	Interaction between river and coastal ecosystem	Y. Suzuki
Lecture 8	Fundamentals in optimum operation of reservoir systems	T. Hori

Practices

Exercise 1	Basic course of data analysis	T. Hamaguchi
Exercise 2	Data analysis of GCM data, historical data	K. Tanaka
Exercise 3	River basin modelling	Y. Sato
Exercise 4	Impact assessment by hydrological model	Y. Sato
Exercise 5	Impact assessment by ecological model	S. Kobayashi
Exercise 6	Optimization of reservoir operation	D. Nohara
Field Survey	Ecological field survey at Kizu river	Y. Takemon

Technical visits

Lake Biwa, Katsura River, Yodo River

Schedule (2 to 13 December, 2013)

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1 (Sunday)	Arrival at Kansai Airport and movement to Kyoto	
2 (Monday)	Registration & Guidance (morning)	
	Introduction of the activity of UNESCO (morning)	Shahbaz Khan
	Keynote Lecture 1 (afternoon)	M. Zalewski
	Keynote Lecture 2 (afternoon)	S. Kazama
	Welcome party (evening)	
3 (Tuesday)	Lecture 1 (morning)	Y. Tachikawa
	Lecture 2 (afternoon)	E. Nakakita
4 (Wednesday)	Lecture 3 (morning)	Y. Takemon
	Exercise 1 (afternoon)	T. Hamaguchi

5 (Thursday)	Lecture 4 (morning)	Ignasius D. A. Sutapa
	Exercise 2 (afternoon)	K. Tanaka
6 (Friday)	Exercise 3 (morning)	Y. Sato
	Exercise 4 (afternoon)	Y. Sato
7 (Saturday)	Technical visits to Lake Biwa and Yodo River	
8 (Sunday)	Technical visits and Cultural exchange with students at the Katsura river	
9 (Monday)	Lecture 5 (morning)	O. Saito
	Lecture 6 (afternoon)	T. Sumi
10 (Tuesday)	Lecture 7 (morning)	Y. Suzuki
	Exercise 5 (afternoon)	S. Kobayashi
11 (Wednesday)	Field Survey (morning & afternoon around the Kizu River)	Y. Takemon
12 (Thursday)	Lecture 8 (morning)	T. Hori
	Exercise 6 (afternoon)	D. Nohara
13 (Friday)	Report presentation by each participant (morning)	
	Completion ceremony of this course (morning)	
	Farewell party (afternoon)	
14 (Saturday)	Departure from Kansai Airport	

Downloading the Textbook for Participants from the Net

The textbook of "the 23rd IHP Training Course", which is converted in PDF style, will be prepared and will be put on the IHP Nagoya forum website of "www.ihpnagoyaforum.org". The participants are requested to download such a PDF file from the website in advance as a preparation to the several lectures of the training course. The textbook should be constituted of one page abstract and presentation material with authorized copyrights.

Web broadcasting the Lectures

The lectures except with the exception of field survey 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 its whole slides will be masked out with digital treatments such as overlaying mosaic images or with black-out screening during web broadcasting.