SUMMER PROGRAM
SUSTAINABLE WATER MANAGEMENT
IN AN ERA OF BIG DATA

25 JULY – 5 AUGUST, 2016
VENUE: THE UNIVERSITY OF TOKYO &
ICHARM, TSUKUBA, JAPAN

The University of Tokyo (UTokyo) and the International Centre for Water Hazard and Risk Management (ICHARM) under the auspices of UNESCO, Public Works Research Institute (PWRI), Tsukuba, will organize a Summer Program. The course, consisting of expert lectures, technical exercises, and excursions, is designed to promote problem-solving capability for water problems with interdisciplinary approach and by exploiting various data and functions of the Data Integration and Analysis System (DIAS) of Japan. Participants will work on real problems focusing on developing resilience to disasters under the climate change, preparedness for risk of unforeseen disasters and how to introduce this risk into social management and planning for safe and naturally rich environment.
Field excursions to the successful realizations:

SHIMOKUBO DAM
A multipurpose dam of a unique shape serving for flood protection, water supply, hydropower generation, and environmental conservation.

SAITAMA UNDERGROUND CHANNEL
An anti-flood scheme for local residents, completed in 2006. Having employed a variety of new technologies, it is the very best of Japan's state-of-the-art civil engineering technology.

CONCEPT AND DESIGN

Systematic, meaningful, and practical
The emphasis is on appropriate usage of various observation data, model outputs, data integration functions of DIAS, and geospatial technologies such as GIS for resolving given problems.

NATURAL SCIENCE AND TECHNICAL ASPECT

SOCIO-ECONOMICAL AND MANAGEMENT ASPECT
Solution to each problem must consider the viewpoint of local society and economical possibilities to be realistic and implementable for a given country. The key procedures of consensus building and awareness raising will be introduced.

Participatory, interactive, and fun
Lectures, self-practice, group work, field visits, social event

Problem-solving oriented
Participants will be solving real case problems in concrete Asian river basins focusing on water resources issues under the changing climate including:
- water and food security
- poverty alleviation through flood disaster risk reduction
- integrated water resources management considering environment and community life

The lecture curriculum is supportive for solving the stated problems (theory background, tools, and methodology introduction) and includes introduction of real cases from Japan focusing on the process of planning → realization

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SAITAMA UNDERGROUND CHANNEL
An anti-flood scheme for local residents, completed in 2006. Having employed a variety of new technologies, it is the very best of Japan's state-of-the-art civil engineering technology.
DIAS is a project for the creation of knowledge, which can be shared worldwide. With the goal of providing comfortable, safe, and naturally rich environment. It considers risk of unforeseen disasters and researches how to introduce this risk into social management and planning to assure sufficient preparedness. It provides knowledge on how to exploit data and data integration functions of DIAS for this purpose.

**THEMATIC FOCUS**

The Summer Program explores how to develop resilience to disasters under the climate change, while providing comfortable, safe, and naturally rich environment. It considers risk of unforeseen disasters and researches how to introduce this risk into social management and planning to assure sufficient preparedness. It provides knowledge on how to exploit data and data integration functions of DIAS for this purpose.

**PARTICIPATION FEE AND LOGISTICS**

The course participation fee is 30,000 JPY (about 280 USD), which includes organizational and field trip expenses. In addition, participants are responsible for their expenses associated with transportation (including local commuting), accommodation, meals, and travel/health insurance.

**ACCOMMODATION**

Participants are requested to assure accommodation in Tokyo, during the Week 1 by themselves. Several options are mentioned at the Program homepage. In Tsukuba, during the Week 2, the Organizers strongly recommend the participants to stay in the Urban Hotel Tsukuba, which is nearby the ICHARM facilities and from which a shuttle bus will be arranged for everyday commuting. Hotel reservations are assured by the Organizers but the accommodation fee will be paid by the participants (5,500 JPY per person per night, without breakfast).

All the participants, who are not long-term residents in Japan are requested to assure travel/health insurance. A proof of purchasing such insurance will be requested in advance.

**ELIGIBILITY**

The course is open for 20 participants, both from Japan and abroad. It is mainly intended for undergraduate students, but applications by graduate and post-graduate students as well as young professionals will also be accepted and considered. All applicants must have sufficient knowledge of English, which will be the course language and must be able to attend the program for the whole duration. Applications from various majors and disciplines are welcome.

**HOW TO APPLY**

Applicants should fill out the on-line application form available at: The due date for application is Sunday 15th May 2016.

**IMPORTANT DATES**

Application Due date: Sunday, May 15th  
Announcement of acceptance: Tuesday, May 24th  
Confirmation of attendance: Tuesday, May 31st  
Arrival date in Tokyo: Sunday, July 24th  
Departure date from Tsukuba: Saturday, August 6th

**DATA INTEGRATION AND ANALYSIS SYSTEM (DIAS)**

DIAS is a project for the creation of knowledge, which can be shared worldwide. With the goal of providing access to global and regional sensing data, we have developed a pilot system for the creation of an information storage infrastructure for public benefit applications and the deepening of scientific knowledge in the areas of climate, water cycle, for application in fisheries, agriculture and biodiversity management particularly through the linking of information across disciplines. This approach has proven to be effective with the successful implementation of our pilot project.
## PROGRAMME
### WEEK 1
### AT UTOKYO

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### 7.25 (MON)
#### HONGO CAMPUS

**SESSION 1**
- **Introduction**

**SESSION 2**
- **Current Issues on Water**
  - Toshio Koike
    - Professor, Dept. Civil Eng., UTokyo; Director, ICHARM

**SESSION 3**
- **Case Problem Introduction and Group Formation**
  - Akiyuki Kawasaki and Petra Koudelova
    - Dept. of Civil Eng., UTokyo

**SESSION 4**
- **Group Discussion and First Presentations**
  - Akiyuki Kawasaki and Petra Koudelova
    - Dept. of Civil Eng., UTokyo

### 7.26 (TUE)
#### KOMABA CAMPUS

**SESSION 1**
- **Global Water Circulation**
  - Taikan Oki
    - Professor, Institute of Industrial Science, UTokyo

**SESSION 2**
- **Integrated Water Resources Management towards Sound Water Cycle**
  - Kenzo Hiroki
    - Research Coordinator, ICHARM

**SESSION 3**
- **Big Data and AI create new world**
  - Masaru Kitsuregawa
    - Professor, Institute of Industrial Science, UTokyo

**SESSION 4**
- **DIAS Introduction and Demonstration**
  - Toshio Koike and Akiyuki Kawasaki
    - UTokyo

### 7.27 (WED)
#### HONGO CAMPUS

**SESSION 1**
- **DIAS CMIP5 Tool – Model Selection**
  - Petra Koudelova
    - Research Associate, Dept. Civil Eng., UTokyo

**SESSION 2**
- **DIAS CMIP5 Tool – Precipitation Bias Correction**
  - Petra Koudelova
    - Research Associate, Dept. Civil Eng., UTokyo

### 7.28 (THU)
#### GUNMA PREFECTURE

**SESSION 1**
- **Shimokubo Dam**
  - Hominoyama, Fujioka, Gunma Prefecture

### 7.29 (FRI)
#### HONGO CAMPUS

**SESSION 1**
- **GIS: Introduction**
  - Akiyuki Kawasaki
    - Project Associate Professor, Dept. Civil Eng., UTokyo

**SESSION 2**
- **GIS: Exercise**
  - Akiyuki Kawasaki
    - Project Associate Professor, Dept. Civil Eng., UTokyo

**SESSION 3**
- **GIS: Hands-on/Self study**
  - Akiyuki Kawasaki
    - Project Associate Professor, Dept. Civil Eng., UTokyo

### 7.30 (SAT)

**SESSION 1**
- **Optional additional CMIP5 and/or GIS hands-on**

**SESSION 2**
- **Free time**
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<td>8.1 (MON)</td>
<td>Excursion to Japan Aerospace Exploration Agency (JAXA)</td>
<td>Metropolitan Area Outer Underground Discharge Channel</td>
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<td>Social Science Approach to Water Related Disasters</td>
<td>Hydrological and Flood Modeling</td>
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|  | TBD | Haruo Hayashi  
Professor  
DPRI, Kyoto University | Yoshihiro Shibuo  
Research Specialist, ICHARM |  |
| 8.3 (WED) | River and Water-related Disaster Management | Economic Evaluation of Natural Disaster and Mitigation Policy | Hydrological and Flood Modeling |  |
|  | TBD | Muneta Yokomatsu  
Associate Professor, Disaster Prevention Research Institute, Kyoto University | Yoshihiro Shibuo  
Research Specialist, ICHARM |  |
| 8.4 (THU) | Hydrological and Flood Modeling | Discussion and preparation for presentation |  |  |
|  | Yoshihiro Shibuo  
Research Specialist, ICHARM |  |  |  |
| 8.5 (FRI) | Discussion and preparation for presentation | Student presentations | Closing ceremony and reception |  |
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CONTACT

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