



ICHARM

Activity

Report

FY2014-2015

for the 2nd ICHARM Governing Board

on 3rd March, 2016

International Centre for Water Hazard and Risk Management
under the auspices of UNESCO (ICHARM),
Public Works Research Institute (PWRI), Japan

ICHARM Activity Report FY2014-2015

Contents

A. ICHARM Activities in FY 2014	-1-
1. New directorship	
2. Research —Innovative Research—	-1-
2.1 Grant research	
2.2 MEXT-led Program for Risk Information on Climate Change	
2.3 JSCE Best Paper Award	
2.4 16th Infrastructure Technology Development Award	
3. Capacity Building	-2-
3.1 Doctoral program: Disaster Management	
3.2 Master's program: Water-related Disaster Management Course of Disaster Management Policy Program	
3.3 FY2014 JICA Training Program: Capacity Development for Flood Risk Management	
3.4 IFAS local workshops and lectures	
3.5 Joint training for Malaysian experts	
3.6 Follow-up seminar in Indonesia	
3.7 Internship	
4. Information Networking	-6-
4.1 Contribution to Typhoon Committee: 47th session of the Typhoon Committee in Thailand	
4.2 Visit by Directorate General of Water Resources Indonesia	
4.3 Information-sharing meeting with the Bangladeshi Ministry of Disaster Management and Relief	
4.4 21st Session of the IHP Intergovernmental Council	
4.5 Side event of the 6th Asian Ministerial Conference on Disaster Risk Reduction (SE3)	
4.6 ICFM6 in Brazil	

- 4.7 Visit by Iranian ambassador and RCUWM director
 - 4.8 Participation in a UNSGAB meeting
 - 4.9 Visit by Vietnam IT experts
 - 4.10 Visit by a minister from Uttar Pradesh State in India
 - 4.11 Second joint project team meeting of Sentinel Asia Step 3
 - 4.12 Workshop in Myanmar
 - 4.13 Visit by the Federation of Thai Industries (FTI) member companies
 - 4.14 Visit by Iranian parliamentary delegates
 - 4.15 Visit by delegates from Asian countries
 - 4.16 Visit to the Ministry of Public Works and Housing, Indonesia
 - 4.17 PAGASA-UNESCO seminar in the Philippines
 - 4.18 Visit by UNESCO officials
 - 4.19 Third UN World Conference on Disaster Risk Reduction
5. Local Practices -15-
- 5.1 UNESCO Pakistan project
 - 5.2 ADB Myanmar project (TA8456)
 - 5.3 Introduction of Auto IFAS in the Philippines (ADB TA8074-REG)
6. Outreach -17-
- 6.1 International symposium by ICHARM and GRIPS
 - 6.2 ICHARM Open Day 2014
 - 6.3 JAXA Talk Event
 - 6.4 Online publicity and newsletters
 - 6.5 ICHARM R&D Seminars

B. ICHARM Activity in FY 2015	-23-
1. Special Topics	
1.1 MOU with NIED	
1.2 ICHARM Director honored the Science Award	
1.3 Dr. Miyamoto presented with the PWRI President's Award	
2. Research – Innovative Research –	-24-
2.1 Grant-in-aid research	
2.2 MEXT-led Program for Risk Information on Climate Change	
2.2.1 Symposium on climate change impact and adaptation in water-related disasters	
2.2.2 Meeting with the Ministry of Public Works and Housing, Indonesia	
2.3 Research and International collaboration on discharge observation	
2.3.1 Discharge measurement workshop in the Shinano River	
2.3.2 30th ISO/TC113 meeting in Tokyo	
2.3.3 Overseas river investigations	
2.4 On-site investigation in flood-ravaged Joso City, Japan	
2.5 Technical advice on the SAFE prototype project	
3. Capacity Building	-28-
3.1 Doctoral degree program “Disaster Management Program”	
3.2 Master’s degree program “Disaster Management Policy Program – Water-related Disaster Management”	
3.3 Short-term Training Programs	
3.3.1 FY2015 JICA Training Program: Capacity Development for Flood Risk Management	
3.3.2 International summer program with Tokyo University	
3.4 IFAS on-site workshops	
3.4.1 IFAS training in Viet Nam	
3.5 Internship	
4. Information Network	-32-
4.1 7th World Water Forum	
4.2 International Flood Initiative	
4.2.1 Collaborative Research with BfG	
4.2.2 Joint IFI/IDI session at the UNESCO 70th anniversary symposium	
4.3 Visitors to ICHARM	
4.3.1 Visit by NAHRIM-Malaysia DG and delegates	

4.3.2	Visit by secretary-general II of Malaysia's Education Ministry	
4.3.3	Visit by Taiwan Vice Minister	
4.4	Participation in international conferences	
4.4.1	Contribution to Expert Meeting on Developing Indicators for Disaster Risk Reduction by UNISDR	
4.4.2	Workshop on Risks and Impacts on Floods from Extreme Events in ASEAN Countries	
4.4.3	Workshop on “Strengthening Water Partnerships for Climate Change and Disaster Risk Management”	
4.4.4	4th Conference of the Taiwan Integrated Research Programme on Climate Change Adaptation Technology	
4.4.5	Technical session at the 2nd UN Special Thematic Session on Water and Disasters	
4.4.6	ICHARM contributed the UNESCO ENHANS project in South America	
4.5	Typhoon Committee	
5.	Local Practices	-40-
5.1	UNESCO Pakistan project: Phase 2	
5.2	ADB Myanmar project (TA8456): Transformation of Urban Management	
6.	Outreach	-43-
6.1	ICHARM Open Day joined by local high school students	
6.2	ICHARM R&D Seminar	
6.3	ICHARM Newsletters	
Annex 1	List of Number of Alumni	
Annex 2	Publication List	
Annex 3	UNESCO-related activities	

A. ICHARM Activities in FY2014

1. New directorship

On October 1, 2014, Professor of Tokyo University Toshio Koike became the second director of ICHARM after Professor Emeritus of Yamanashi University Kuniyoshi Takeuchi. Professor Takeuchi stepped down from the director position on the same day after eight and half years since the official establishment of ICHARM, and became the advisor of ICHARM.



Photo-A.1 New Director Toshio Koike

2. Research —Innovative Research—

2.1 Grant research

In 2014, ICHARM conducted a series of research in collaboration with other institutes and organizations both in Japan and overseas to observe and assess the risk of floods due to rainfall and contribute the results to risk management in planning and implementing appropriate measures. Six research tasks were designed and conducted under three project research schemes in the grant research category. The three project research schemes were: 1. Technological development for the prevention and mitigation of intensified water-related disaster damage due to climate change and other factors; 5. Study on technologies for the efficient use of information on disaster prevention and disaster damage; and 10. Understanding of the basin-scale behavior of substances and water-quality management technologies. The six research tasks under those schemes were: study on the impact of global warming on floods and droughts with uncertainty considerations; study on flood forecasting for extremely fast water-level increase; study on technologies for the effective use of information on disaster prevention and disaster damage; development of a basic system to support comprehensive flood and water resources management; development of satellite-based technologies to assess flood inundation area, damage and hydraulic quantity; and study on the basin-scale behavior of substances.

2.2 MEXT-led Program for Risk Information on Climate Change

Since 2012, ICHARM has participated in MEXT-led Program for Risk Information on Climate Change. The purpose of our task in this program is to make quantitative estimates, including uncertainty, on changes of water-related disaster risks such as floods and droughts in selected vulnerable river basins and to evaluate socio-economic impacts due to such changes.

In 2014, we took on the development of basic technologies for basin-scale impact assessment. In this research task, we performed physical downscaling of GCM data and projected future changes in rainfall at the basin scale.

We also conducted flood impact assessment for selected river basins in Asia. In the case of the Solo River basin in Indonesia, we employed the RRI model to analyze the relationship among rainfall, discharge and inundation and carry out frequency analysis on discharge and inundation, using different rainfall data from actual observation and MRI-AGCM3.2S (for the present and future climate conditions). In the case of the lower Mekong River basin, we also employed the RRI model with rainfall from APHRODITE and confirmed the reproducibility of the RRI model for the discharge within the basin. We also analyzed the response relationship between rainfall and inundation in the Chao Phraya River basin, using the RRI model with the rainfall from MRI-AGCM3.2S for the future climate condition and potential evapotranspiration calculated from meteorological factors.

Additionally, we performed flood and drought risk assessment at the basin scale. Drought impact was assessed for the Pampanga River basin, using the BTOP model for runoff forecasting simulation. The duration and depth of inundation were also assessed for the same basin, using the RRI model and assuming different scales of flood (the 2011 flood, a 50-year flood and a 100-year flood).

Furthermore, we conducted on-site investigations for the river basins of Mekong in Cambodia, Solo and Pampanga. Information was collected and sorted out to evaluate the selected areas for flood and drought vulnerability and assess socioeconomic impact of flood and drought.

2.3 JSCE Best Paper Award

The research paper on rainfall-runoff inundation prediction using the RRI model (produced by Takahiro Sayama, Yuya Tatebe, Susumu Fujioka, Tomoki Ushiyama, Atsuhiko Yorozuya, and Shigenobu Tanaka) was awarded the 2013 Best Paper Award by the Japan Society for Civil Engineers (JSCE). In this paper, they proposed a methodology applicable to large-scale floods worldwide and capable of analyzing rainfall, runoff and inundation simultaneously at the basin scale. The paper also reported on a case study in which they applied the proposed method to the 2011 flood in Thailand to forecast its development and plan emergency response. The award was given for their contributions to the improvement and progress of academic study and technology, i.e., proposing a new analysis methodology, performing emergency response simulation, providing information for disaster prevention, and encouraging practical applications of the method to prediction systems and risk assessment.

2.4 16th Infrastructure Technology Development Award

ICHARM Researcher Atsuhiko Yorozuya, ICHARM Research Specialist Yoshiki Motonaga and Hydro Systems Development, Inc. CEO Takashi Kitsuda received the 16th Infrastructure Technology Development Award for the development of a system for observing river and sediment discharges by the use of an acoustic Doppler current profiler (aDcp). This aDcp system had been an important project of ICHARM for several years, and was finally recognized for its outstanding capabilities of observing undersurface phenomena highly accurately even during flooding.

The award-winning system comprises a set of technologies ranging from observation to data processing and is a result of the development of peripheral devices, integration of observational results, and creation of data algorithms. It will allow general users to perform highly accurate observation of river and sediment discharges, and assist river administrators in obtaining high-quality data if widely used for discharge observation that MLIT has been conducting across Japan.



Photo- A.2 Presentation at the ceremony



Photo- A.3 Graduation ceremony for doctoral students

3. Capacity Building

3.1 Doctoral program: Disaster Management

ICHARM started a doctoral program, “Disaster Management,” in 2010 in collaboration with GRIPS to produce experts who are capable of making policies on water-related disaster risk management and taking the leadership in implementing such policies. In 2014, Ms. Karina Vink graduated from the program after three years of hard work. On September 12, 2014, she was awarded with a doctoral degree in disaster management at the graduation ceremony held at GRIPS. For her thesis, she developed a quantitative method to evaluate flood risk management at national, regional and ever wider-area levels from the viewpoint of the disaster vulnerable.

As of October 2015, a total of six students (first-year: one, second-year: three, third-year: two) are enrolled in the doctoral program, studying climate change, risk assessment and other topics.

3.2 Master’s program: Water-related Disaster Management Course of Disaster Management Policy Program

ICHARM provides a one-year M.Sc. program, “Water-related Disaster Management Course of Disaster Management Policy Program (JICA Training Program: Training for Expert on Flood-Related Disaster Mitigation)”, as a joint effort with JICA and GRIPS. The program started its seventh year on October 4, 2013, and ended on September 11, 2014.

On September 11, 2014, the closing ceremony of the program was held at the JICA Tsukuba office, where PWRI Chief Executive Taketo Uomoto, JICA Tsukuba Director Senichi Kimura and GRIPS’s professor Shoichi Ando made a



Photo- A.4 M.Sc and Ph.D. students after the graduation at GRIPS

congratulatory speech, and Mr. Cabrita Alfonzo Raul Figuera of Venezuela spoke in return on behalf of the students. This year’s Excellent Researcher Award was presented to Ms. Onjira Pauline Ingado of Kenya and Ms. Ferrer Santy Bumali of the Philippines. The Sontoku Award, which is given by ICHARM to the student that made the most contribution to the entire class during the program, was presented to Mr. Zaw Myo Khaing of Myanmar.

On September 12, the graduation ceremony was held at GRIPS, where the twelve students were awarded a Master’s degree in disaster management.

Meanwhile, another set of students started the eighth year of the Master’s program on October 4, 2015. This year, 13 students joined this one-year program.

3.3 FY2014 JICA Training Program: Capacity Development for Flood Risk Management

ICHARM conducted the JICA training program, “Capacity Development for Flood Risk Management with IFAS,” from July 8 to August 1, 2014. The training is designed to provide opportunity for meteorologists, river administrators,

and disaster managers in flood-vulnerable developing countries to learn about disaster management, including evacuation plans and flood response cases in Japan, as well as to develop an action plan for local flood management of flood-vulnerable areas in their countries. These training activities also aim to enhance individual flood-coping capacities and eventually to contribute to flood damage mitigation in their countries.



Photo- A.5 IFAS training at ICHARM

In the final year of this three-year training program starting in 2012, twenty people participated from Bangladesh, Kenya, Nigeria, the Philippines, Thailand, Butan and Vietnam, which was the largest participation that ICHARM had ever had since it started providing the training programs.

They mainly learned how to operate the IFAS system along with additional training, such as disaster prevention map training in Joso City and a study trip to the Shinanogawa River under the management of the Hokuriku Regional Development Bureau. Through the training, they made a great improvement in operation of IFAS and also learned about Japan’s longstanding experience in disaster management.

3.4 IFAS local workshops and lectures

ICHARM continued providing training at local sites to disseminate the use of IFAS.

We conducted IFAS training at University Tenaga National (UNITEN) in Malaysia from June 30 to July 4, 2014. The training was held as part of the research project scheduled from 2011 to 2015 on the reduction of damage by floods and landslides in Malaysia. The project was led by Tokyo University Professor Hiroyuki Tosaka and one of the research assignments organized by Japan Science and Technology Agency (JST) and JICA as Science and Technology Research Partnership for Sustainable Development (SATREPS).



Photo- A.6 IFAS training at UNITEN in Malaysia

For this training, ICHARM sent Chief Researcher Yoichi Iwami, Researcher Mamoru Miyamoto and Research Specialist Duminda Perera as instructors. Participants from the university and local disaster managers were highly motivated to learn how they could apply IFAS locally, as the Malaysian government was planning to put a flood forecasting system in place for the Kelantan and Dungun rivers.



Photo- A.7 IFAS workshop at Tokyo

On July 11, 2014, we conducted a workshop on free software, IFAS and iRIC, for hydrology and water resources as

the 7th seminar by the Japan Society of Hydrology and Water Resources at a satellite office of the Muroran Institute of Technology. Chief Researcher Yoichi Iwami and Researchers Mamoru Miyamoto and Shun Kudo participated in the workshop as instructors.

On October 6-10, 2014, a four-day training session on IFAS was organized under a program on “Capacity Development for Immediate Access and Effective Utilization of Satellite Information for Disaster Management” in Jakarta, Indonesia. The training program was hosted by JICA and the ASEAN Coordinating Centre for Humanitarian Assistance on Disaster Management (AHA Centre).

Eighteen participants attended the training from nine member countries of ASEAN except Singapore, which were Brunei, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, the Philippines, Thailand and Vietnam.

The IFAS session consisted of lectures and hands-on practice. From the lectures, the participants learned an outline of flood forecasting models, advantages to use satellite rainfall products as input to the models, and the importance of model parameter identification in comparison with in-situ hydrological observations. The participants also learned that all necessary procedures in hydrological modeling (model construction, input data processing, parameter identification, and model validation) can be easily carried out with IFAS. Through the hands-on practice, they additionally learned an objective technique for hydrological prediction using IFAS.

In 2014, a total of 153 people from 16 countries participated in IFAS local workshops and lectures.

3.5 Joint training for Malaysian experts

ICHARM and the University of Tokyo teamed up for five-day joint training on February 23-27, 2015, for a group of Malaysian researchers led by Dr. Lariyah Mohd Sidek from Universiti Tenaga Nasional (UNITEN) of Malaysia. This training was held also as part of the research task described in the previous section (3.4).

Nine invited Malaysian researchers were divided into two groups; Group I to attend the workshop at ICHARM on the operation of a flood forecasting model called the Integrated Flood Analysis System (IFAS) and Group II to participate in the workshop on GETFLOWS at Prof. Tosaka’s laboratory of the University of Tokyo. The ICHARM group worked on flood analysis using IFAS over the Kelantan River basin and inundation analysis by applying the RRI model to the Dungun River basin.



Photo- A.8 UNITEN researchers attending the joint workshops

On February 25, the two groups joined for a study trip to the lower Tone River area. They first visited the Tonegawa-Karyu River Office of the Kanto Regional Development Bureau of MLIT for a lecture by Director Tetsuya Nakamura on their operation. They also had a chance to take a look at the disaster management headquarters of the river office. They also walked along the Ono River, took a ride on a Harukaze patrol boat to the opposite side of the river, where they studied the Yokotone lock. The study trip helped the UNITEN researchers to have better understanding of flood control measures in Japan.

3.6 Follow-up seminar in Indonesia

ICHARM convenes an annual seminar in a country of graduates from ICHARM educational programs to provide follow-up assistance. Follow-up seminars are a great opportunity for ICHARM to see how they are using what they learned at ICHARM and also to learn actual issues they face in their local practice, which later help ICHARM to improve its training programs and enhance its research activities.



Photo- A.9 Participants in the follow-up seminar

The 2014 follow-up seminar was held in Jakarta, Indonesia, on March 3-4, 2015, in collaboration with the Water Resources Department of the Ministry of Public Works and Housing of Indonesia, the JICA Indonesia Office and other JICA experts in integrated water-resources policy. Four out of the seven Indonesian graduates from our master's program joined the seminar along with some personnel of the Public Works and Housing Ministry participating as observers.

On the first day, ICHARM Chief Researcher Minoru Kamoto gave a greeting speech with Mr. Hideki Katayama, an adviser of JICA Indonesia, and Ir. Hartanto. Dipl. He., the secretary of the director general of Water Resources. Then, three speakers, including ICHARM Research and Training Advisor Shinji Egashira, delivered a special presentation, followed by six category-A general presentations including water-related issues in Indonesia. ICHARM Chief Researcher Yoshio Tokunaga facilitated the meeting, mixing Indonesian from time to time. On the second day, the master's program graduates made a presentation along with category-B general presentations including flood risk management in Jakarta.

3.7 Internship

ICHARM offers an internship program, accepting interns from both Japan and overseas. In 2014, we had five interns, two from Kyoto University, one each from UNESCO-IHE, United Nations University and the Federal Institute of Hydrology in Germany. They stayed several weeks at ICHARM and learned about IFAS, the BTOP model, and the RRI model with help from ICHARM researchers.

4. Information Networking

4.1 Contribution to Typhoon Committee: 47th session of the Typhoon Committee in Thailand

The Typhoon Committee is an intergovernmental community jointly organized in 1968 by the Economic and Social Commission for Asia and the Pacific (ESCAP) and the World Meteorological Organization (WMO) to promote and coordinate the development and implementation of plans to minimize human and physical damage caused by typhoons in the Asia and Pacific region.

The 47th session was convened in Bangkok, Thailand, on February 9-13, 2015, along with the 3rd joint meeting with the Tropical Cyclone Panel (PTC) of countries in southern and western Asia. ICHARM Chief Researchers, Minoru Kamoto and Yoshio Tokunaga, participated in the meeting.

As the chair of the hydrological component of the committee, Mr. Kamoto led the review of activities by the

hydrological component and discussions on the collaboration with PTC and other additional issues.



Photo-A.10 The 3rd Joint Session of ESCAP/WMO Typhoon Committee and WMO/ESCAP Panel on Tropical Cyclone

4.2 Visit by Directorate General of Water Resources Indonesia

On May 20, 2014, two guests from the Directorate General of Water Resources Indonesia, Director General of Water Resources Dr. Ir. Mohamad Hasan and Director of Directorate of Water Resources Management Dr. Arie Setiadi Moerwanto, visited ICHARM with JICA expert Mr. Kunihiro Moriyasu to discuss issues on the Memorandum of Understanding (MoU) to be concluded between the two institutes.

At the meeting, ICHARM first explained ADB projects, the SOSEI project, and other activities in which it has been involved along with achievements from such projects, and shared the list of Indonesian training participants who studied in ICHARM educational programs. In return, Dr. Arie explained the water resource strategy of Indonesia.

In the question and answer session, the Indonesian officials asked questions on the results of drought damage assessment and measures for natural dams.



Photo-A.11 Director General Dr. Hasan (right foreground) and Director Dr. Arie from the Directorate General of Water Resources Indonesia

4.3 Information-sharing meeting with the Bangladeshi Ministry of Disaster Management and Relief

Seven officials, including Assistant Secretary Jnanendra



Photo-A.12 Group photo with visitors from MoDMR

N. Biswas, from the Bangladeshi Ministry of Disaster Management and Relief (MoDMR) visited ICHARM on June 12, 2014, and discussed issues on disaster management with ICHARM researchers.

ICCHARM researchers introduced their research and technological development on water-related disaster risk management for several Asian regions including Bangladesh. After that, the participants discussed various issues; for example, type of data needed to monitor and predict floods, methods to collect such data, the importance of satellite data, methods to deliver information for early warning and evacuation, and the importance of disaster education.

4.4 21st Session of the IHP Intergovernmental Council

The 21st session of the Intergovernmental Council of the International Hydrological Programme (IHP) was held at the UNESCO Headquarters in Paris on June 18-20, 2014. Five delegates from Japan attended the session, including Chief Delegate Kaoru Takara of the Japanese National Commission for UNESCO and Director Kuniyoshi Takeuchi of ICHARM (now Advisor).

In this session, the council members discussed the strategic plan for the eighth phase of IHP (IHP-VIII, 2014-2021) and other proposals including the establishment of new category I and II centers.

Mentioning the progress of the project entitled “Strategic Strengthening of Flood Warning and Management Capacity of Pakistan,” Director Takeuchi expressed his gratitude for the support provided by the IHP Secretariat, and vowed to produce expected outputs for the country in cooperation with the secretariat. In the discussion on the strategic plan for the eighth phase of IHP, the director also emphasized the importance of implementing plans and, to do so, strengthening collaboration among category I and II centers.

4.5 Side event of the 6th Asian Ministerial Conference on Disaster Risk Reduction (SE3)

During the 6th Asian Ministerial Conference on Disaster Risk Reduction, MLIT and ICHARM organized a side event on June 23, 2014, in Bangkok, Thailand. Under the title of “Water-Related Disaster Risk Information for Risk Reduction: Flood Forecasting, Disaster Information & Risk Assessment for Preventative Investment”. This side event gathered government officers, experts and other various stakeholders in water-related disaster management.



Photo-A.13 Side event in Bangkok

After the moderator, Prof. Shahbaz Khan of UNESCO, delivered the opening remarks, Chief Researcher Hisaya Sawano of ICHARM spoke, pointing out the importance of information in disaster management and addressing the need for the development of an archiving strategy for water-related disaster risk information. He also introduced examples of local practice led by ICHARM. JICA expert Kunihiro Moriyasu also spoke, stating that risk information should be easily understood by not only decision makers but also the general public and that preventive investment is very effective to reduce disaster risk.

Panelists from Cambodia, Indonesia, Myanmar and Thailand introduced their current practices of collecting, compiling and managing data at various phases of water-related disaster risk management, and also stressed the importance of data and information to encourage preventive investment.

4.6 ICFM6 in Brazil

The 6th International Conference on Flood Management (ICFM6) was held in Sao Paulo, Brazil, on September 16-18, 2014. The conference was organized with the theme of “Floods in a Changing Environment” by the Brazilian Water Resources Association and Acquacon Consultoria. More than 250 participants gathered from 31 different nations.

During the three-day conference, many participants shared their experience and efforts in flood management and actively discussed important issues and challenges in the field faced by individuals, communities, local authorities, businesses, nations and regions.

ICHARM also organized a preliminary session on the International Flood Initiative (IFI) with speakers from the Federal Institute of Hydrology in Germany, the China Institute of Water Resources and Hydropower Research, the U.S. Army Corps of Engineers, IFI-LAC in Mexico, the World Meteorological Organization, and UNISDR Brazil office, including



Photo-A.14 Panelists at the IFI preliminary session hosted by ICHARM

three ICHARM members. The session was well organized, attracting over 200 attendees, and created a new thrust for the IFI flagship project to further promote benchmarking at global, national and community levels for flood risk reduction.

4.7 Visit by Iranian ambassador and RCUWM director

On September 1, 2014, a ceremony for signing the memorandum of understanding between ICHARM and the Regional Centre on Urban Water Management (RCUWM) in Tehran was held. Dr. Reza Nazar Ahari, the ambassador of the Islamic Republic of Iran, and Dr. Ali Chavoshian the director of RCUWM, visited PWRI for this purpose.

The MoU was signed in the presence of the ambassador and the PWRI chief executive in the hope that the MoU would facilitate research exchange and technical cooperation for mutual benefits of both organizations.

Along with the participation in the signing ceremony, the ambassador and the delegates paid courtesy visits to Dr.



Photo-A.15 Signing MoU between ICHARM and RCUWM

Uomoto, the chief executive of PWRI, and Mr. Iwasaki, the director general of NILIM, and took a short institutional tour to the dam hydraulics laboratory and the dynamic geotechnical centrifuge laboratory.

4.8 Participation in a UNSGAB meeting

The 23rd United Nations Secretary General’s Advisory Board on Water and Sanitation (UNSGAB) was held on October 29-31, 2014, in Tokyo in the presence of his Imperial Highness of Japan. UNSGAB was established in 2004 in response to the request by the UN secretary general of the time to strengthen global efforts in addressing water issues, which are considered as key challenges to alleviate global poverty and achieve sustainable development.

ICHARM Director Toshio Koike participated as a speaker for the technical discussion of the meeting and delivered a speech entitled “Data Integration and Analysis

System (DIAS) Contributing to Disaster Risk Deduction and Sustainable Development”. In his speech, he introduced the DIAS initiative designed as part of a country-level data processing system for data archiving in order to cope with ever-increasing Earth observation data in quantity and quality. He also pointed out the importance of improving risk assessment capabilities by integration and inter-linkage of knowledge beyond disciplines, as well as the importance of co-design and co-production of good disaster management practices through collaboration between society and science and technology.



Photo-A. 16 ICHARM Director Koike at the UNSGAB meeting

4.9 Visit by Vietnam IT experts

On October 22, 2014, five Vietnamese information technology experts visited ICHARM to discuss hydrological observation and flood management.

ICHARM researchers outlined how basin monitoring and flood forecasting and warning are practiced to reduce flood damage. They also explained what measures may be effective to solve current flood-related issues in Vietnam, based on experience accumulated from local practice cases ICHARM has implemented throughout the world. In the discussion, the importance of public involvement starting from hydrological observation to other activities that follow was also emphasized during local implementation.



Photo-A.17 Meeting with information experts from Vietnam

4.10 Visit by a minister from Uttar Pradesh State in India

On October 28, 2014, HE Shivpal Singh



Photo-A.18 Group photo with Indian officials and a water resources expert of the World Bank

Yadav, the honorable cabinet minister, Mr. Deepak Singhal, the principal secretary of the Irrigation and Water Resources Department, and three water resource experts from Uttar Pradesh State, India, visited ICHARM with Mr. Jun Matsumoto, senior water resources management specialist of Global Practice-Water at the World Bank, to collect information on innovative flood risk management.

The state is located in the Ganges River Basin and suffers flood damage frequently. In fact, a large-scale flood and inundation occurred last July in a northern part of the state, which shares the border with Nepal, and dozens of people died or went missing during the event. Flood risk management has been recognized as an urgent matter and finally addressed as a project led by World Bank.

In the meeting, the Indian experts first explained about the current situations of flood disasters and risk management in the state while ICHARM gave a presentation on flood forecasting and warning systems, flood risk assessment and other technologies in addition to an outline of ICHARM. The participants had a lively discussion, exchanging views and ideas.

4.11 Second joint project team meeting of Sentinel Asia Step 3

Sentinel Asia is an initiative in which disaster management and space agencies in the Asian region collaborate to use satellite observation data through information and communication technology in order to reduce disaster damage in the region. The initiative has addressed a wide range of challenges from research and development to satellite information sharing. It is currently at the full-fledged implementation stage (Step 3), which began in 2013, aiming to achieve sharing a broader array of satellite data for wider application.



Photo-A.19 Sentinel Asia Step 3 meeting in Yangon, Myanmar

The second joint project team meeting of Sentinel Asia Step 3 was held on November 19-21, 2014, in Yangon, Myanmar. Forty-five people from 29 organizations attended the meeting to report and discuss issues on various topics. ICHARM Chief Researcher Yoichi Iwami participated in the meeting and chaired the working group on flood. He also reported on the current activities and future direction of the flood working group in the meeting, as well as relevant activities of ICHARM.

4.12 Workshop in Myanmar

ICCHARM Director Toshio Koike and Chief Researcher Hisaya Sawano participated in a workshop, “River Basin Management using Science and Technology”, held on November 24, 2014, in Nay Pyi Taw, Myanmar. The workshop was co-hosted by the JICA-JST SATREPS Myanmar Project (led by Tokyo University and Yangon Technical University), the Network of Asian River Basin Organization, and the Ministry of



Photo-A. 20 Participants of the workshop in Myanmar

Transportation, Myanmar.

The ICHARM director made a keynote speech, in which he emphasized the importance of the role of science and technology and data archiving that support them in order to operate optimal water resources management for sustainable development and security of mankind. He also explained that various organizations of Japan have come together as Team Japan to make orchestrated support for the efforts of Myanmar institutions to improve the management of water-related disaster risk. Chief Researcher Sawano delivered a presentation on a method for water-related disaster risk assessment and its use in addition to outlining ICHARM's activities and an ADB project currently in progress in Myanmar.

They also joined a panel discussion and discussed the necessity of practicing data archiving and the importance of producing leaders for sustainable capacity development.

4.13 Visit by the Federation of Thai Industries (FTI) member companies

On December 17, 2014, 13 representatives from 11 member companies of the Federation of Thai Industries (FTI) visited ICHARM to exchange views and ideas on issues related to water management. The participating companies belong to various industry sectors in Thailand including water supply, energy, petrochemistry, and pulp and paper. Through the meeting, they showed great interest in Japan's approaches to water resources management and disaster management.



Photo-A.21 Meeting with FTI member companies

The meeting started with a presentation by ICHARM Chief Researcher Masahiko Murase, who outlined the organization and activities of ICHARM. Chief Researcher Hisaya Sawano followed and explained about projects that ICHARM had been carrying out in Thailand. After asking questions on the presentations, the FTI members shared their experiences with floods and droughts in the past.

This meeting revealed that few companies in the group suffered direct damage from the 2011 flood. Instead, many of them suffered from drought events in the past. They presented cases of concerted area-wide effort to ensure effective water use in eastern Thailand, where many of the companies are located and serious droughts were once common. Finally, ICHARM and the visiting group agreed to continue sharing useful information with each other.

4.14 Visit by Iranian parliamentary delegates

On December 19, 2014, parliamentary delegates from the Islamic Republic of Iran visited PWRI with members of the Iranian embassy for the courtesy visit to the PWRI Chief Executive and discussion with ICHARM researchers.

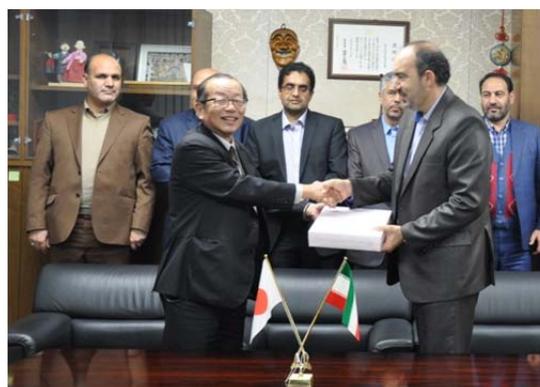


Photo-A.22 Courtesy visit to the PWRI chief executive by Iranian parliament delegates

The delegation led by Mr. Iraj ABDI, including members of the parliament's Social Commission and the embassy, visited PWRI Chief Executive Taketo Uomoto and received a brief explanation on civil engineering research in Japan. They also visited ICHARM and discussed activities for

water-related disaster risk reduction and exchanged views on issues related to the depletion of Lake Urmia and related technologies in Japan.

4.15 Visit by delegates from Asian countries

On February 2, 2015, five representatives from China, Korea, Thailand, Turkey and Vietnam visited ICHARM as part of the fellowship program organized by the Japanese National Commission for UNESCO of MEXT. ICHARM has been supportive of this fellowship program.

They took a short tour of PWRI facilities and visited the hydraulic laboratory to learn about research directly related to a public infrastructure project. After that, they paid a courtesy visit to ICHARM Director Toshio Koike and discussed activities of UNESCO centres.



Photo-A. 23 ICHARM director and visitors from Asian countries

4.16 Visit to the Ministry of Public Works and Housing, Indonesia

ICHARM sent Chief Researcher Hisaya Sawano and Senior Researchers Daisuke Kuribayashi and Morimasa Tsuda to Indonesia on February 9-10, 2015, to visit its Ministry of Public Works and Housing, where they planned to meet with officials and experts and discuss issues including the possibility of data collection.

On the first day, the ICHARM researchers paid a courtesy visit to Mr. Basuki Hadimuljono, the minister of Public Works and Housing, with four JICA Experts, Messrs. Moriyasu, Watanabe, Miura and Nakao, and JICA Advisor Mr. Katayama to exchange views and opinions. The minister showed great interest in activities of ICHARM and requested for its participation in Indonesia's Water Week, scheduled next May. They also met with Dr. Mudjiadi, the director general of Water Resources, Dr. Arie, the director of Directorate of Water Resources Management, and Dr. Made, the head of Subdit of Hydrology & Water Quality, and explained to them about the Solo River project of the SOUSEI program and ICHARM's training and educational programs in which several Indonesian students have studied, as well as requested for arrangement for data collection.



Photo-A. 24 Chief Researcher Sawano with Minister Basuki

4.17 PAGASA-UNESCO seminar in the Philippines

On February 24-26, 2015, the International Seminar on Enhancing Resilience against Multi-Hazards through Effective Mitigation Systems and Adaptation Strategies was jointly convened by UNESCO and the Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA). Chief



Photo-A. 25 Chief Researcher Murase at the seminar

Researchers Masahiko Murase and Yoichi Iwami and Senior Researcher Morimasa Tsuda attended the meeting from ICHARM.

The seminar was held to discuss how to improve the coping capacity for multiple disasters in light of lessons learned from Typhoon Haiyan, which hit the Philippines in 2013 and caused an unprecedented catastrophe due to huge storm surges and other hazards, affecting about 11 million people and claiming the lives of over 6,000.

Three ICHARM researchers delivered a presentation at the meeting. Chief Researcher Murase first expressed his heartiest congratulations on organizing the seminar on behalf of the International Flood Initiative (IFI), a global effort in integrated flood control, which ICHARM serves as its secretariat. He then spoke about the current activities of IFI. Chief Researcher Iwami presented the characteristics of damage caused by floods, storm surges and tsunamis that Japan has ever experienced as well as lessons and efforts to reduce disaster damage in consideration of those characteristics. Senior Researcher Tsuda updated the participants with the latest information on flood forecasting and warning technologies, such as IFAS, the RRI model, the BTOP model, and Indus-IFAS, which was a system specifically designed for the UNESCO Pakistan project.

In addition, Ms. Santy B. Ferrer (NIA-UPRIIS, Dam and Reservoir Division) and Mr. Emar Guevara Basilan (Mines and Geosciences Bureau), who graduated from the master's program organized by ICHARM and GRIPS, also reported on their research at ICHARM.

4.18 Visit by UNESCO officials

On March 10, 2015, Dr. Alexandros K. Makarigakis and two other experts from the UNESCO headquarters visited ICHARM. They were showed around ICHARM experiment facilities and received a brief explanation about quality management on hydrological observation at ICHARM's current meter calibration facility. After that, they paid a courtesy visit to ICHARM Director Toshio Koike and discussed the roles of science and technology for disaster risk reduction, as well as activities of UNESCO centres.

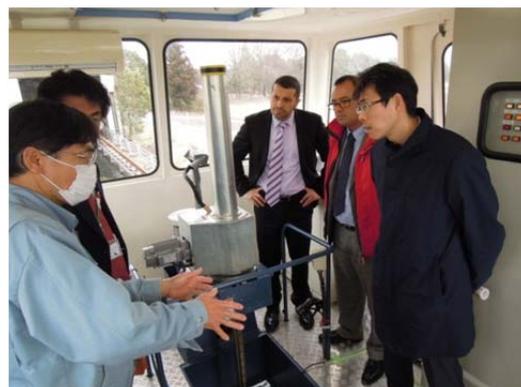


Photo-A.26 Visitors from UNESCO headquarters at the current meter calibration facility

4.19 Third UN World Conference on Disaster Risk Reduction

UNWCDRR is an international conference hosted by the United Nations to develop global disaster risk reduction strategies. The first conference was held in 1994 in Yokohama, Japan. The second one was held in 2005 in Kobe, Japan, which adopted a global disaster risk reduction policy, known as the Hyogo Framework for Action. The Sendai conference is the third gathering joined by 187 of 193 UN Member States with a total participants of over 140,000. According to the United Nations Office for Disaster Risk Reduction (UNISDR), some 6,500 nations' leaders, ministers, representatives of international organizations and internationally accredited NGOs attended the intergovernmental and multi-stakeholder segments, and many more participated in related events such as public forums.

“Working Session: Risk Identification and Assessment” was about risk information, which is essential in risk identification and assessment. They discussed how the information can be used in policymaking effectively.

ICHARM Chief Researcher Hisaya Sawano was one of the panelists in this session. He pointed out the need of risk assessment, which encourages prior investment to assess the effectiveness of planned structural measures (i.e., simulation on changes in damage with or without measures), and stressed the importance of data collection and management, which is critical in accurate risk assessment. He also spoke about contributions of ICHARM in international cooperation.



Photo-A. 27 Panelists at UNWCDRR

5. Local Practices

5.1 UNESCO Pakistan project

ICHARM completed the UNESCO Pakistan project, “Strategic Strengthening of Flood Warning and Management Capacity of Pakistan,” in June 2014. The project started in the fiscal year of 2011 after the huge flood disaster in 2010, which caused serious damage over the country. ICHARM assisted this project in the development of a flood forecasting and warning system, the detection of inundation area, and capacity development.



Photo-A. 28 Participants in the workshop

The flood forecasting and warning system is called Indus-IFAS, which is devised by coupling two runoff analysis models (IFAS, RRI) that have been developed and continuously improved by ICHARM. Indus-IFAS is designed to cover a large area of the Indus River with a vast river basin alongside. Besides flood forecasting and warning, the system is also capable of simulating inundation area. It was initially put on trial run at the Pakistan Meteorological Department in June 2013 and then officially in operation in June 2014 for flood forecasting and warning. (PMD Web site: http://www.pmd.gov.pk/FFD/index_files/ifashyd.htm)

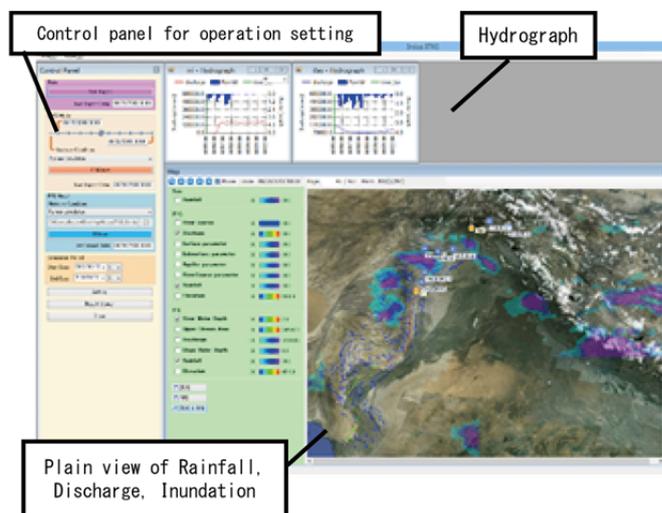


Photo-A. 29 Sample display image of Indus-IFAS

In this project, capacity development training was also provided for Pakistani engineers. A total of five trainees were sent by the Pakistani government to study in the master course jointly managed by ICHARM and GRIPS. A ten-day workshop was also organized for middle to high ranking administrative officers in 2012 and 2013, in which 11 trainees learned flood management strategy practiced in Japan.

On June 25-26, 2014, a workshop on the use of remote sensing data for flood warning and management was held in Nay Pyi Taw, Myanmar. ICHARM researchers presented the results of the project.

During the project period, ICHARM conducted international workshops and on-site IFAS operation training 10 times in total.

5.2 ADB Myanmar project (TA8456)

An ADB-funded capacity development technical assistance project for Myanmar, “Transformation of Urban Management (TA8456),” was launched. The objective of the project was to promote sustainable urban development in Myanmar cities through the improvement of the management capacity of national and local governments. It comprised two parts: Part I for enhancing the capacity of urban public services such as water supply, waste management, and drainage and Part II for improving the capacity of flood management. ICHARM was assigned to the second component of the project to provide technical assistance in collaboration with Japanese companies. Part II was carried out specifically for the three Myanmar cities of Yangon, Mandalay and Mawlamyine.



Photo-A. 30 Inception meeting in Nay Phy Taw

Part II supported the Department of Meteorology and Hydrology (DMH), the Ministry of Transport, which is responsible for flood forecasting and warning. The project assisted DMH in flood and storm-surge assessment for the project area, and in the institutional capacity-building through training on the use of the Rainfall-Runoff-Inundation model and a storm-surge model. In addition, training activities were planned to improve the capacity of flood risk assessment for the central and local governments in charge of flood management.

The inception meeting of Part II was convened in Nay Pyi Taw on September 16, 2014. A group of six ICHARM researchers led by Chief Researcher Hisaya Sawano participated in the meeting along with officials from Myanmar’s central and local agencies involved in flood management. ICHARM staff outlined the project and discussed the current conditions of flood risk reduction efforts, challenges and opportunities regarding the three cities with the participants.

ICHARM researchers also visited the country on October 8-18 for on-site investigation in the project areas. They also collected necessary data and information and had meetings with officials from government agencies, JICA, UN agencies and those involved in Part I of the project. With more training and other activities already scheduled, the project is expected to help Myanmar improve its flood management capacity to a greater degree.

5.3 Introduction of Auto IFAS in the Philippines (ADB TA8074-REG)

As a support activity for the joint technical assistance project (TA8074-REG) organized by ADB and JAXA, the Auto Integrated Flood Analysis System (Auto IFAS), developed by ICHARM, was test-installed at



Photo-A. 31 Lecture on Auto IFAS for PAGASA engineers

the headquarters of the Philippine Atmospheric Geophysical & Astronomical Services Administration (PAGASA).

ICHARM Researcher Mamoru Miyamoto had been involved in the introduction of Auto IFAS until June 4-6, 2014, including giving a series of lectures on the outline and operation of the system for engineers in PAGASA. Auto IFAS is specifically designed as a real time flood forecasting system for the Cagayan River basin, where flood damage is frequent. The most important characteristic of this system is to use GSMaP, satellite rainfall data provided by JAXA, after calibrating it to ground rainfall. The forecasting results are made available at the PAGASA website on a real-time basis to assist local governments to issue evacuation orders quickly at a proper timing. The system was given a test run and calibration during the flood season in 2014, and is currently available for at the PAGASA website for policy makers.

6. Outreach

6.1 International symposium by ICHARM and GRIPS

On September 30, 2014, ICHARM and GRIPS co-hosted an international symposium, “Together with the People Coping with Increasing Water-related Disasters in the World,” in Tokyo.

This symposium was intended to report past and current activities of ICHARM and to discuss what ICHARM should do and how it should achieve them in the coming age of post-2015 sustainable development goals and post-Hyogo Framework for Action with researchers and experts from Japan and overseas.

The symposium opened with greetings by PWRI Chief Executive Taketo Uomoto and GRIPS President Takashi Shiraishi, followed by congratulatory remarks from Dr. Koji Ikeuchi, the director-general of the Water and Disaster Management Bureau, MLIT, and Mr. Masashi Akiba executive secretary of the Japan National Commission for UNESCO, MEXT. ICHARM Director (now Advisor)

Kuniyoshi Takeuchi made a keynote speech entitled “Goals, Strategies and Achievements of ICHARM,” outlining the eight-year effort of ICHARM including research, training, information networking and local practices. Prof. Toshio Koike of Tokyo University delivered a presentation, “Science and Technology Supporting Water-related Disaster Risk Reduction,” explaining the importance of creation of new knowledge by using information ever increasing in quality and quantity, as well as introducing the project of the Global Earth Observation System of Systems (GEOSS).



Photo-A. 32 Keynote by Professor Takeuchi



Photo-A. 33 Professor Koike (left)



Photo-A. 34 Panelists at the symposium

Three speakers were invited to share the experiences and efforts related to a mega disaster. Dr. Kate White, a senior lead of the US Army Corps of Engineers, first reported on Hurricane Sandy in 2012 in the U.S., Prof. Jonna Estudillo of GRIPS spoke about Typhoon Haiyan in 2013 in the Philippines, and finally Prof. Dr. Shahbaz Khan, the deputy director of UNESCO Jakarta, presented on the Indus flood in 2010.

A panel discussion, “Towards Water-related Disaster Risk Reduction, ICHARM’s Challenge,” was also held with Prof. Koike as a moderator, joined by the three invited contributors and four additional panelists: Prof. Tadashi Yamada of Chuo University, Prof. Kaoru Takara of Kyoto University, Prof. Taikan Oki of Tokyo University, and Mr. Yusuke Amano, the director of the International Affairs Office, River Planning Division, MLIT. The panelists presented the latest studies and international strategies on water disaster damage reduction, and had productive discussions with the audience on various issues, such as difficulties in assisting localities in project implementation and the importance of individuals and institutes in facilitating the concept of “working together” in multi-disciplinary areas.

The symposium was attended by nearly 200 participants and successfully ended with the closing remark by PWRI Executive Hiroshi Fujisawa.

A report on this symposium has been available at the ICHARM homepage as the Technical Note of PWRI No.4296 “Report on ICHARM International Symposium.”

6.2 ICHARM Open Day 2014

ICHARM held the annual “ICHARM Open Day” on April 18, 2014, as a part of the open house event of PWRI during the Tsukuba Science & Technology Week in April. Foreign researchers and master and doctoral students of ICHARM prepared for this event. A total of 66 students, exceeding the number of the previous year, visited ICHARM from the Ibaraki Prefectural Takezono High School and the Ibaraki Prefectural Namiki Secondary School.

ICHARM Director Kuniyoshi Takeuch welcomed the students in the ICHARM auditorium, and Research Specialist Kelly Kibler from U.S. delivered a lecture on disaster damage in Colorado in 2013. Doctoral student Robin Kumar from Bangladesh also delivered a lecture on Bangladesh including history and geography, water-related and other natural disasters.

After the lectures, the students moved to the second floor of ICHARM to attend the poster session prepared by ICHARM students from 11 countries including the Netherlands, Guatemala, China, El Salvador, Kenya, Myanmar, Sri Lanka, Pakistan, the Philippines, Venezuela, and Bangladesh. During the question and answer session, local school students enjoyed communicating in English, asking many questions to the researchers and students of ICHARM.

Many local students commented on this event that it was a great opportunity to be exposed to different English from various countries. The ICHARM Open Day was an exciting and productive event for both participants and ICHARM members.

6.3 JAXA Talk Event



Photo-A. 35 Students and ICHARM staff at the entrance hall

JAXA hosted a talk event, “Sora (outer space) Session,” on October 25, 2014, in Tsukuba, Japan.

The event was held under the grand theme of “Capturing Changes of Earth from Space” with small presentations and discussions. ICHARM Senior Researcher Morimasa Tsuda participated as a panelist and spoke about the use of satellites in disaster management.

The event attracted about 140 visitors and was viewed by over 600 people through live Internet broadcasting. The footage of the event is available on the JAXA website (<http://fanfun.jaxa.jp/jaxatv/detail/3303.html>).



Photo-A. 36 Panel discussion at the JAXA talk event

The senior researcher presented a brief introduction on IFAS, a flood forecasting and warning system using satellite rainfall data, which has been developed and continuously improved by ICHARM. The presentation was well received by audience and other panelists, who pointed out the importance of using satellite data provided by JAXA for public purposes and communicating information among relevant people and organizations.

6.4 Online publicity and newsletters

We have constantly updated our website with news and other information to publicize our activities worldwide.

We have also published ICHARM Newsletters as a medium to periodically deliver a variety of information on research, training, local practices, and publications. The newsletters have been published on a quarterly basis since March 2006. In 2014, Newsletters No. 32 to 35 were published in March, July, October and January, for example.

6.5 ICHARM R&D Seminars

We holds ICHARM R&D Seminars on an irregular basis as an opportunity for researchers inside and outside ICHARM to keep up with the latest knowledge and information from domestic and international experts in the field of hydrology and water-related disasters.

In 2014, four seminars were held as follows, inviting experts from home and overseas including Dr. Ursula Schaefer-Preuss, the chair of the Global Water Partnership (GWP).



Photo-A. 37 ICHARM Newsletter

No.	Date	Speaker	Position, Affiliation, etc.	Presentation Title
48	June 10	1. Dr. Ursula Schaefer-Preuss 2. Dr. Ania Grobicki 3. Dr. Mohamed Ait-Kad	1. Chair, Global Water Partnership (GWP) 2. GWP Executive Secretary 3. Chair, GWP Technical Committee	1. GWP strategy 2. GWP : Building water security, climate resilience and integrated management of water-related disasters 3. THE GLOBAL WATER PARTNERSHIP: A KNOWLEDGE NETWORK

49	Aug. 27	1. Dr. Takahiro Sayama 2. Dr. Yoshiki Motonaga	1. Senior Researcher 2. Research Specialist	1. Representation of Groundwater in Rainfall-Runoff-Inundation Model 2. Method of simultaneous measurement for water discharge and sediment transport using Acoustic Doppler Current Profiler ~Technology to understand the phenomenon under water-surface during flood~
50	Sep. 1	Dr. Ali Chavoshian	Director of Regional Center on Urban Water Management (RCUWM) under the auspices of UNESCO	Water resources issues in Iran and RCUWM-Tehran
51	Oct. 1	1. Dr. Kate White 2. Dr. Shahbaz Khan	1. Senior Lead for Global and Climate Change, Institute of Water Resources, US Army Corps of Engineers 2. Deputy Director and Senior Program Specialist, UNESCO Jakarta	1. Sharing Lessons Learned About Future Water Resources Infrastructure Challenges 2. Water Innovations and Cooperation -For Shaping the Future We Want for All-

Feature Column: 3rd UN World Conference on Disaster Risk Reduction

The 3rd United Nations World Conference on Disaster Risk Reduction (UNWCDRR) was convened on March 14-18, 2015, in Sendai, Japan.

The UNWCDRR is an international conference hosted by the United Nations to develop global disaster risk reduction strategies. The first conference was held in 1994 in Yokohama, Japan. The second one was held in 2005 in Kobe, Japan, which adopted a global disaster risk reduction policy, known as the Hyogo Framework for Action.

ICHARM made active contribution to the conference, participating in various sessions and sharing information and ideas with international audience.

Table-1 Contributions to the world conference by ICHARM

Date & Time	Session	ICHARM representative	Host	Venue
Intergovernmental and multi-stakeholder segments				
Sat., March 14 15:00-16:30	Working session: Risk Identification and Assessment	Panelist: Hisaya Sawano (Chief Researcher)	UNISDR, WMO, UNESCO, MLIT, ICHARM, etc.	Hagi Conference Hall, Sendai International Center
Public forums				
Sat., March 14 13:45-15:45	Flood in Europe: new risks and strategies to build resilience	Moderator: Kuniyoshi Takeuchi (Advisor)	German Committee for Disaster Reduction	Kawauchi Kita Campus, Tohoku University
Sat., March 14 13:00-20:00	Disaster Management Policies – Preparedness against Large Tsunamis and Earthquake	Presentation speakers: Two Ph.D. & three Master's students of ICHARM	National Graduate Institute for Policy Studies (GRIPS), UNESCO	AER Garden City Sendai
Sun., March 15 13:00-16:00	Asian Conference on Disaster Reduction 2015	Presentation speaker: Yoshio Tokunaga (Chief Researcher)	Cabinet Office, Asian Disaster Reduction Center, UNISDR, etc.	TKP Garden City Sendai Kotodai
Mon., March 16 18:00-20:00	Building an international alliance for integrated and resilient delta management	Presentation speaker: Yoshiyuki Imamura (Chief Researcher)	MLIT, etc.	Kawauchi Kita Campus, Tohoku University
Tue., March 17 10:00-12:00	DISASTER RISK REDUCTION (DRR) AND INTERNATIONAL COOPERATION	Panelist: Toshio Koike (Director)	JICA	Kawauchi Kita Campus, Tohoku University
March 14-18	Panel exhibition on disaster management by MLIT	Daisuke Kuribayashi (Senior Researcher) Karina Vink (Research Specialist)	MLIT	AER Garden City Sendai

For example, in “Working Session: Risk Identification and Assessment,” held on March 14, ICHARM Chief Researcher Hisaya Sawano was one of the panelists in this session, representing Japan, which was selected as one of the five nations that practices risk assessment effectively.

He explained that risk assessment plays an important part in evaluating the effect of structural measures as an investment prior to disasters, and also stressed the importance of data collection and management, which is critical for accurate risk assessment. He also spoke about contributions of ICHARM in international cooperation.



Photo-1 Panelists at a working session

Public Forum: Asian Conference on Disaster Reduction 2015

ICHARM Chief Researcher Yoshio Tokunaga participated in the forum as a speaker to present the case of a debris flow disaster in Indonesia. He outlined a landslide event that occurred on July 13, 2012, in Negeri Lima Village of

Ambon and a subsequent event of debris flow caused by the collapse of the natural dam created by the landslide. The dam collapsed on July 25, 2013, about a year after the landslide. He also spoke about the efforts in disaster damage mitigation and Japan's contribution in the efforts. Village Mayor Pesihatu was with him and explained that the debris flow was an extremely large disaster, and that only three were victimized though villagers were doing things just as usual until a few hours before the event, adding that he was grateful to Japan for its cooperation in the emergency.

During the conference, MLIT opened an exhibition about past disasters and current efforts in disaster management. ICHARM joined this exhibition to inform the public of its contribution to the international community (Photo 2).



Photo-2 Panel exhibition

The Sendai conference was the third gathering and joined by 187 of 193 UN Member States with over 140,000 participants in total. According to the United Nations Office for Disaster Risk Reduction (UNISDR), some 6,500 nations' leaders, ministers, representatives of international organizations, and internationally accredited NGOs attended the intergovernmental and multi-stakeholder segments, and many more participated in related events such as public forums.

The 3rd UNWCDRR adopted the Sendai Framework for Disaster Risk Reduction 2015-2030 as the new global policy for disaster management. Member countries are expected to work towards disaster risk reduction in compliance with this framework. ICHARM is strongly committed to further reduction of water-related damage in the world through a diversity of activities and partnership with relevant organizations.

B. ICHARM Activity in FY 2015

1. Special Topics

1.1 MOU with NIED

ICHARM signed a memorandum of understanding (MOU) with the Research Center for Reinforcement of Resilient Function of the National Research Institute for Earth Science and Disaster Prevention (NIED) on December 16, 2015.

The MOU was to establish a framework for research cooperation and related activities through comprehensive and sustainable collaboration, and to facilitate its implementation by technical networking of research outputs for disaster risk reduction both within and outside Japan.

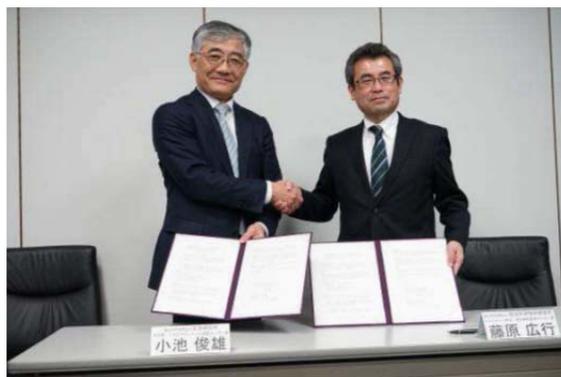


Photo-B. 1 ICHARM Director Koike (left) and NIED Director Fujiwara at the MoU ceremony

1.2 ICHARM Director honored the Science Award

ICHARM Director Toshio Koike, also a professor of the University of Tokyo, was honored with the Science Award by the Japan Society of Hydrology and Water Resources on September 10, 2015. This award is granted to those who have made significant academic contribution in the field of hydrology and water resources through their outstanding academic work.

Professor Koike was awarded for his useful academic and social work through an advancement of hydrological monitoring and modeling with satellite observation, development of a hydrological data assimilation system and improvement of the understanding of the hydrological variation over the Asian monsoon region such as precipitation and runoff processes, and realization of integrated river management with the Data Integration and Analysis System (DIAS). He is currently promoting advancement in knowledge in the field of earth science and creation of social advantages as a leader of the DIAS project.



Photo-B. 2 Director Koike with the award certificate

1.3 Dr. Miyamoto presented with the PWRI President's Award

ICHARM Researcher Mamoru Miyamoto was honored by the President of PWRI for his excellent work at the 2015 President's Award presenting ceremony, held in July 16, 2015.

He has been involved in the development of flood forecasting systems for flood damage mitigation and also active in promoting them internationally. He was particularly recognized for the uniqueness of his work in the research and development of new technologies to increase the applicability of the systems and the ingenuities he had devised to localize them.



Photo-B. 3 Dr. Miyamoto (left) receives the award from the PWRI president

2. Research – Innovative Research –

2.1 Grant-in-aid research

The year 2015 was the final year of the PWRI mid-term plan, and ICHARM conducted various research tasks as part of three research projects: 1. Development of technologies to prevent or mitigate water-related disasters intensified by climate change and other factors; 5. Research on technologies for efficient use of information on disaster management and disasters; and 10. Understanding of the basin-scale behavior of substances and water-quality management technologies. The research tasks are conducted on the following themes:

- Impact of global warming on floods and droughts in consideration of uncertainty
- Flood forecasting for a sudden increase in river discharge
- Technologies for efficient use of information on disaster management and disasters
- Disaster risk reduction considering the process from water-related disaster to reconstruction
- Development of a base system to support the comprehensive management of floods and water resources
- Development of satellite-assisted technologies to assess inundation area, damage and hydraulic quantities over a wide area
- Characteristics of the basin-scale behavior of substances

ICHARM conducted research on these themes in collaboration with domestic and overseas organizations in order to upgrade the accuracy in flood risk assessment in relation to rainfall and thereby improve risk management by developing and implementing effective coping measures.

2.2 MEXT-led Program for Risk Information on Climate Change

2.2.1 Symposium on climate change impact and adaptation in water-related disasters

A symposium on climate change impact and adaptation in the field of water-related disasters was held on May 29, 2015, in Tokyo. It was jointly organized by the Water and Disaster Management Bureau of MLIT and the SOUSEI program, or the MEXT-led Program for Risk Information on Climate Change.

Mr. Atsushi Suzuki, the deputy director of ICHARM of that time, attended the symposium as a panelist and presented the latest research results on water-related disaster risk assessment in Asia and production of information for adaptation.



Photo-B. 4 Presentation by Deputy Director Suzuki

2.2.2 Meeting with the Ministry of Public Works and Housing, Indonesia

Mr. Sawano visited the Ministry of Public Works and Housing at Jakarta to meet with Mr. Mudjiadi, the director general of Water Resources, Mr. Widiarto, the director of Directorate of Water Resources Network Development, and Mr. Charisal, the head of Subdit of River Basin Planning. Mr. Sawano gave a briefing on the research that ICHARM has been conducting regarding the impact of climate change on floods and droughts over the Solo River basin as part of the MEXT-led SOUSEI program. Aware that droughts are a real possibility in the Solo River basin over the coming years and adaptation may be necessary at a basin scale, Mr. Mudjiadi expects the research to deliver useful results for their future basin management.



Photo-B. 5 Director General Mudjiadi (right) and Mr. Sawano (left, at center)

2.3 Research and International collaboration on discharge observation

In river planning, accurate, efficient discharge observation is critically important. The Hydrological Team of ICHARM has been very active at pioneering this field both at home and overseas.

2.3.1 Discharge measurement workshop in the Shinano River

An on-site discharge measurement workshop was held on April 22-25, 2015, at the Shinano River Ojiya observation station in Niigata Prefecture.

This workshop was organized by the sub-committee of the Japan Society of Civil Engineers on improvement of discharge measurement technology (chair: Professor Ichiro Fujita of Kobe University). About 100 people participated from universities, hydrology-related sections of MLIT, construction consulting firms, and measurement instrument makers.

Since the objective was to upgrade measurement technology, this workshop compared different discharge measurement instruments under the uniform conditions. On the day, the flow regime was rather rough with a flow



Photo-B. 6 Workshop participants at the observation point

velocity of over 4 m/s. This time, in addition to the conventional float measurement, several methods were tested,

including electric wave current meters, electromagnetic velocity meters and image analysis. ICHARM test-ran another method using an acoustic Doppler current profiler (aDcp) to share collected data with other participants.

This workshop was a great opportunity to learn about the latest measurement technologies, as well as existing ones. For example, movie shooting for image analysis was performed in three different ways using regular high-definition cameras, nighttime far-infrared cameras and cameras mounted on a multicopter for aerial shooting.

2.3.2 30th ISO/TC113 meeting in Tokyo

The 30th ISO/TC113 meeting was convened on May 25-29 at the Japan Society of Civil Engineers (JSCE) in Shinjuku, Tokyo. The scope of ISO/TC113 is the standardization of hydrometry, or measurement of liquid flow in open channels. ICHARM participated in ISO/TC113 meetings previously held in other countries, representing JSCE, the responsible body in Japan to discuss various issues related to ISO/TC113. ICHARM prepared for this Tokyo meeting in collaboration with relevant members of JSCE and the Water and Disaster Management Bureau of MLIT. Chief Researcher Yoichi Iwami and Researcher (now Senior Researcher) Atsuhiko Yorozuya of ICHARM attended the SC1 meeting on velocity area methods as Japanese representatives.

In the ISO/TC113 meeting, Yorozuya was appointed as convener to upgrade ISO/TR 24578 (Hydrometry – Acoustic Doppler profiler – Method and application for measurement of flow in open channels) to an international standard. The meeting also approved that he would be the convener for ISO/NP 24577 (Hydrometry – Use of non-contact methods for measuring water surface velocity and discharge), which had been registered as new work item proposal, and would lead the preparation of a technical report on the topic.



Photo-B. 7 ISO/TC113 Hydrometry 30th Meeting in Tokyo

2.3.3 Overseas river investigations

ICHARM has conducted river investigations in overseas countries to understand the characteristics of continental rivers that are different from those of domestic rivers. In September 2015, a team of researchers were sent to conduct investigations on the lower Mekong River basin in Cambodia and the Jamuna River in Bangladesh.

2.4 On-site investigation in flood-ravaged Joso City, Japan

Due to historical heavy rain over the Tohoku and Kanto regions in September 2015, a severe flood attacked Joso

City in Ibaraki Prefecture, adjacent to Tsukuba City, where ICHARM is located. Because ICHARM started disaster-prevention town watching exercises in the last fiscal year as part of training for its master degree course and JICA's short-term programs with support from Joso City, we carried out an on-site flood damage investigation on September 17. Although the breached levee was being restored and the inundated houses were being cleaned, it was also clear that it would take quite a long time to return to what things had been before the flood.

Learning from lessons from this flood event, ICHARM is planning to upgrade rainfall prediction into an integrated process including discharge and flood prediction, to develop a timeline action plan for disaster response to encourage safe evacuation at the local government level, and to prepare a plan for systematic disaster response training, starting from the next fiscal year.



Photo-B. 7, 8 Collected flood waste

Destroyed area near the breached levee

2.5 Technical advice on the SAFE prototype project

ICHARM Senior Researchers Morimasa Tsuda and Mohamed Rasmay Abdul Wahid participated in the kickoff meeting for the SAFE prototype project, “Deploying GSMaP for Decision Support in Transboundary Catchments in the Lower Mekong Basin,” in Cambodia on September 16, 2015.

This project was organized based on the agreement between JAXA and the Mekong River Commission, aiming to assess the applicability of satellite rainfall information to flood forecasting and drought monitoring over farmland. ICHARM has joined the project to provide technical assistance.

ICHARM has been actively promoting the use of satellite rainfall correction technology coupled with IFAS with support from JAXA. ICHARM's role in this project is to assess the applicability of this technology to the lower Mekong Basin and provide technical advice to improve its applicability. It will also evaluate the validity of soil moisture estimated by the Mekong River Commission by means of LDAS-UT.

In the meeting, ICHARM researchers explained the methods for soil moisture estimation and satellite rainfall correction, which was followed by a lively discussion with local experts who showed great interests and expectations towards the use of satellite data in understanding the distribution of rainfall and soil moisture in the vast basin of the lower Mekong River. The project will be carried out for the next two years until December 2017.

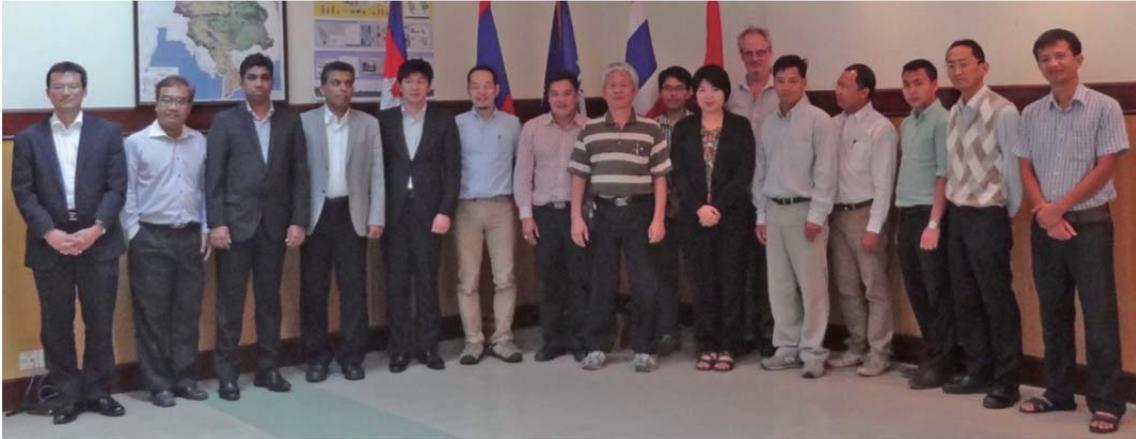


Photo-B. 9 Meeting participants

3. Capacity Building

3.1 Doctoral degree program “Disaster Management Program”

ICHARM, in collaboration with GRIPS, launched a Ph.D. program, “Disaster Management Program,” in 2010 to nurture professionals who can take the leadership in the development and implementation of strategies and policies in the field of water-related risk management. Two students enrolled in the third class of the program, Mr. Rodorigo Reynosa Fernandez and Mr. Muhammad Masood, finished three years of study and awarded a doctoral degree in disaster management at the graduation ceremony held at GRIPS on September 17, 2015. The titles of the doctoral dissertations they produced were



Photo-B. 10 Doctoral degree awarding ceremony at GRIPS

“Comparative Assessment of Hydrologic Functions at Large River Basins and Their Responses to Climate Change” by Mr. Rodorigo and “Assessment of Climate Change Impact on Hydrology of the Ganges-Brahmaputra-Meghna Basin and Implications for Future Water Resource Management” by Mr. Masood.

In November 2015, the doctoral program accepted two new students from Bangladesh and Pakistan, totaling six doctoral students consisting of two first-year students, one second-year student, and three third-year students. They are studying on various topics related to disaster management including climate change and risk assessment.

3.2 Master’s degree program “Disaster Management Policy Program – Water-related Disaster Management”

ICHARM conducted the eighth year of the Master’s degree program “Disaster Management Policy Program – Water-related Disaster Management (a JICA training program for flood disaster management)” in collaboration with JICA and GRIPS from October 3, 2014, to September 17, 2015.

The closing ceremony was held at JICA Tsukuba on September 16, 2015, where PWRI President Uomoto, JICA Tsukuba Director Haga, and Professor of GRIPS Ando made a congratulatory remark for the graduating students. Mr. Virk Muhammad Irfan of Pakistan spoke in return on behalf of the students. This time, the Excellent Researcher Award was given to Mr. Otieno George Chilli of Kenya and Mr. Syed Mohd Faiz of India. Mr. Navarathinam Kirushnarupan of Sri Lanka was honored with this year's Sontoku Award, a prize that is given by ICHARM to the student who helped the class most during the one-year program.



Photo-B. 10 Closing ceremony at JICA Tsukuba

The graduation ceremony was held at GRIPS on September 17, 2015, with the doctoral students. Thirteen master's students were awarded the degree in disaster management.



Photo-B. 11 Graduation ceremony for master's students at Grips

The program has started its ninth year since October 2015 with a new set of 13 students.

3.3 Short-term Training Programs

3.3.1 FY2015 JICA Training Program: Capacity Development for Flood Risk Management

ICHARM conducted the JICA training program, "Capacity Development for Flood Risk Management with IFAS," from July 6 to 31, 2015. The training is designed to provide opportunity for meteorologists, river administrators, and disaster managers in flood-vulnerable developing countries to learn about disaster management, including evacuation plans and flood response cases in Japan, as well as to develop an action plan for local flood management of flood-vulnerable areas in their countries. These training activities also aim to enhance individual flood-coping capacities and eventually to contribute to flood damage mitigation in their countries.

The renewal version of three-year training program started this year. Twenty people participated from Bhutan, Bosnia and Herzegovina, Djibouti, Kenya, Myanmar, Nigeria, the Philippines, Sri Lanka and Thailand. They mainly learned how to operate IFAS along with additional training such as disaster prevention map training in Joso City and a study trip to the Shinanogawa River managed by the Hokuriku Regional Development Bureau of MLIT. Through the training, they made a great improvement in operation of IFAS and gained useful knowledge from Japan's disaster management.



Photo-B. 12.13 Lecture on IFAS

Disaster prevention map training in Joso city

3.3.2 International summer program with Tokyo University

ICHARM and the University of Tokyo (UTokyo) jointly organized an international summer program, “Sustainable Water Management in an Era of Big Data,” from July 27 to August 7, 2015. The decision to organize this program was motivated by the recognition of the rising importance of so-called big data (i.e., data of large volume and variety) and the necessity of an interdisciplinary approach for sustainable water resources management. A total of 33 undergraduate and graduate students and young professionals of different nationalities participated in this program, which was conducted all in English.

This two-week program consisted of expert lectures and technical exercises at UTokyo and ICHARM, and excursions to river management structures near Tokyo. ICHARM Director and UTokyo Professor Toshio Koike, then Chief Researcher Minoru Kamoto, Senior Researcher Mohamed Rasmy Abdul Wahid, Research Specialists Duminda Perera, Yoshihiro Shibuo and Patricia Ann Jaranilla-Sanchez, and Research Assistant Robin Kumar Biswas gave lectures or assistance in exercises. All activities were designed to promote problem-solving capacity for water-related problems with an interdisciplinary approach by exploiting various data and data integration functions of the Data Integration and Analysis System (DIAS) of Japan. The participants worked individually and in groups on actual problems focusing on developing resilience to disasters under 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.

The footage of this program is available at: <https://youtu.be/ricdfhPs3RU>.



Photo-B. 14 Participants and organizers

3.4 IFAS on-site workshops

IFAS on-site workshops were also conducted overseas in 2015 to further promote the use of the system. A total of 120 trainees from 31 countries participated in the workshops held in Japan and overseas. The number includes trainees of ICHARM's master course and short-term training courses. Countries such as Bosnia and Herzegovina, Egypt, Singapore and Yemen sent their trainees to the workshops for the first time.

The total number of trainees who have learned the operation of IFAS in workshops, short-term training courses, and the master's course, has reached 1155 from 53 countries since the fiscal 2007. IFAS has been spreading its use in many parts of the world beyond the Asian region.

3.4.1 IFAS training in Viet Nam

ICHAARM Researcher Mamoru Miyamoto was sent to Viet Nam on April 19-25 as a JICA short-term expert to help implement a JICA technical cooperation project, "Building Disaster Resilient Societies in Central Region in Vietnam (Phase 2)."

This project was designed for the Ca River in Nghệ An Province to eventually conduct flood forecasting by themselves, using satellite information. He lectured on flood forecasting technology and provided practical training on IFAS. Ten participants joined the training from several government agencies: three from the provincial

Department of Dike Management and Flood and Storm Control (DDMFSC) of the Department of Agriculture and Rural Development (DARD), two from the provincial North Central Region Hydro Meteorology Services, and three from Hatinh Province (two from DDMFSC of DARD and one from the Hydro Meteorology Services), and two from Quảng Bình Province (both from the Hydro Meteorology Services). Since some of the participants had already had experience with IFAS, the participants went on to learn more advanced operations such as calibrating parameters and coping with reproduction errors in analysis results. They are planning to introduce IFAS as their flood forecasting system under the leadership of the DDMFSC of Nghệ An Province.



Photo-B. 15 IFAS training at DARD of Nghệ An Province

3.5 Internship

ICHAARM has an internship program and has accepted interns from both Japan and overseas countries. In the fiscal 2015, two interns were accepted: one from the Bandung Institute of Technology of Indonesia and the other from Yonsei University of Korea, who were recommended by Korea's Meteorological Agency. Both stayed at ICHARM for several months to learn hydrological models such as IFAS, BTOP and RRI with technical advice from ICHARM researchers.

4. Information Network

4.1 7th World Water Forum

The World Water Forum (WWF) was originally proposed by the World Water Council, a France-based international NGO, and has been held every three years. It is one of the largest international events in which experts in water-related fields gather from all over the world and discuss and exhibit global water issues to find their solutions. The forum addresses a wide range of topics such as domestic water, agriculture, environment, integrated water resources management, night-soil treatment, wastewater treatment, energy and disaster. The 7th WWF was held on April 12-17, 2015, in Daegu and Gyeongbuk, Korea. About 41,000 participants from the government and other sectors of 168 countries met at the forum, including Japanese delegates from MLIT and other governmental agencies, universities, private corporations and NGOs.

WWF is a conference on a voluntary basis but has been drawn more global attention than other water-related meetings in terms of its scale and the diversity of participating entities. It has contributed to initiating many global actions in recent years as governments and organizations announce their new commitments in this gathering and encourage relevant groups and organizations to make their own commitments and take concrete actions in a voluntary way. At WWF7, the ministerial declaration and the recommendations to ministers highlighted the importance of strengthening responses to disasters and climate change.

Nine members of ICHARM, including Director Toshio Koike, participated in 15 sessions as either chair or speaker (see the table below). The following reports on four sessions among them.

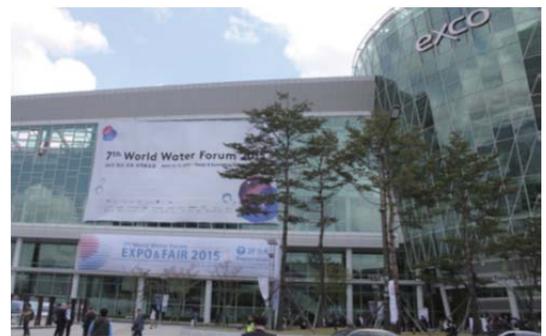


Photo-B. 16 EXCO venue

Water Showcase World Final (T.WS)

Water Showcase was a special program of the Thematic Process of WWF7, which was a type of contest to select good projects on water issues. A project conducted in Ambon, Indonesia, to empower residents for possible collapses of natural dams was jointly submitted for the contest by JICA local staff, residents in the affected area, and NGOs.

The project was nominated as one of the nine final candidates among from 115 projects submitted from all over the world and finally given the Outstanding Award with a trophy. The trophy was presented to ICHARM because its chief researchers, Hisaya Sawano and Yoshio Tokunaga, led the project and also because advice provided by PWRI played a key role in this successful project.



Photo-B. 17 Director Koike (left) and Chief Researcher Tokunaga with the trophy for the Outstanding Award

Table of the sessions in which ICHARM was involved

<i>Date</i>	<i>Session</i>	<i>Participant from ICHARM</i>	<i>Organizer</i>
Thematic Process			
Wed., April 15	Assessing, mitigating, and monitoring risk with use of innovative methodologies and technologies (T.1.3.2)	Welcome remarks: Suzuki (Deputy Director) *as of date above Presentation: Sawano (Chief Researcher), Iwami (Chief Researcher) Panelist: Imamura (Former Chief Researcher)	Water Resources Agency, Ministry of Economic Affairs (WRA), ICHARM
Thu., April 16	Preparedness, Response and Adaptation against Extreme Flood under Climate Change (T.1.3.3)	Presentation: Tokunaga (Chief Researcher)	Han River Flood Control Office(HRFCO), ICHARM
Fri., April 17	Adapting to change: Monitoring risk and uncertainty for resilience and disaster preparedness (T.1.3.Con)	Chair: Koike (Director) Presentation: Tokunaga (Chief Researcher) Wrap-up: Imamura (Former Chief Researcher)	ICHARM
Wed., April 15	Water Showcase World Final (T.WS)	Co-proposal: Tokunaga (Chief Researcher)	WWF7 Secretariat
Political Process			
Mon., April 13	Ministerial Conference, Plenary Session	Koike (Director), Imamura (Former Chief Researcher), Tokunaga (Chief Researcher)	Korean Government
Mon., April 13	Ministerial Roundtable 6, Adaptation to Climate Change and Management of Water related Disaster Risks	Keynote Speech: Koike (Director)	Costa Rica, Netherlands, Korea
Regional Process			
Tue., April 14	Climate change adaptation and mitigation in Africa, Americas, Asia-Pacific, Europe and the Mediterranean region / Building resilience to water-related disasters in the Asia-Pacific region (INR.1.3.AP)	Presentation: Sawano (Chief Researcher) Wrap-up: Kuniyoshi Takeuchi (Advisor)	International Centre for Integrated Mountain Development (ICIMOD)
Science & Technology Process			
Tue., April 14	World Water Challenge special session	Proposal: Iwami (Chief Researcher)	Korea Environment Corporation (KECO)
Tue., April 14	Advances in Drought Analysis Tools and Coping Strategies (S.3.2)	Presentation: Koike (Director)	International Drought Initiative (UNESCO/RCUWM)
Wed., April 15	World Water Challenge ceremony session	Iwami (Chief Researcher), Imamura (Former Chief Researcher), Kwak (Research Specialist)	Korea Environment Corporation (KECO)
Thu., April 16	Water and natural disasters (S.3.Con)	Imamura (Former Chief Researcher)	Korea Society of Hazard Mitigation (KOSHAM), Korea Environment Institute (KEI)
Side Event, etc			
Wed., April 15	The UNESCO'S International Hydrological Programme (IHP): Challenges and Opportunities	Takeuchi (Advisor)	UNESCO-IHP
Wed., April 15	UNESCAP/WMO Typhoon Committee/ the 4th Meeting of TC Working Group on Hydrology	Moderator: Tokunaga (Chief Researcher)	Korea Institute of Civil Engineering and Building Technology(KICT)
12-17 April	Poster exhibition at the UNESCO booth and Japan Booth in EXPO	Kwak Youngjoo (Research Specialist), Karina Vink (Research Specialist)	UNESCO-IHP, government of Japan

4.2 International Flood Initiative

The International Flood Initiative (IFI), initiated in January 2005 by UNESCO and WMO in close cooperation with UNU and ISDR, IAHS and IAHR, has promoted an integrated approach to flood management to take advantage of floods and use of flood plains while reducing the social, environmental and economic risks. Its secretariat is housed in ICHARM. The initiative's objective is to support national platforms to practice

evidence-based disaster risk reduction through mobilizing scientific and research networks at national, regional and international levels. The initiative is now preparing for a new mechanism to facilitate the integrated approach for flood management in the Asia Pacific (IFI-AP) through monitoring, assessment and capacity building.

4.2.1 Collaborative Research with BfG

ICHARM Research Specialist Maksym Gusyev visited the Federal Institute of Hydrology (BfG) of Germany to demonstrate the Rhine River basin flood hazard maps produced in collaboration between ICHARM and BfG. These flood hazard maps represent an envelope of flood inundation extent for the entire Rhine River basin and provide important information for flood risk management.

4.2.2 Joint IFI/IDI session at the UNESCO 70th anniversary symposium

ICHARM and the Regional Centre on Urban Water Management (RCUWM) organized a plenary session, “Preparatory Process for the International Initiative on Water and Disaster in the Asia Pacific Region,” on October 21, 2015, in Medan, Indonesia. The session was organized during the international symposium entitled “Integrated Actions for Global Water and Environmental Sustainability” in conjunction with the 23rd UNESCO-IHP RSC meeting for Southeast Asia and the Pacific.

Prof. Koike was the moderator and explained the intention of the session. After that, Prof. Shahbaz Khan, co-moderator and the director of the UNESCO Jakarta Office, made an opening remark, which was followed by speeches and comments from representatives from ADB, ICHARM and RCUWM.

Based on the valuable inputs from presenters and participants, Prof. Koike summarized the session, emphasizing the practice for Integrated Flood Management (IFM) through sharing information and knowledge with data by practitioners. Financing mechanism and network mobilization of science and research will be discussed later.

The detailed session report including presentations is available at the IFI homepage: <http://www.ifi-home.info/>



Photo-B. 18 (from right to left) ICHARM Director Toshio Koike, Mr. Eric Quincieu (ADB), UNESCO Jakarta Office Director Shahbaz Khan, RCUWM Director Ali Chavoshian

4.3 Visitors to ICHARM

In the fiscal 2015, ICHARM also welcomed many visitors from around the world and exchanged views and ideas on our activities and issues on water-related disaster management.

Date	Countries/affiliations of visitors	No. of visitors	Purpose of visit
May 12	Department of Hydro-Met Services of the Ministry of Economic Affairs, Bhutan	Six	To learn about IFAS at a JICA training session.
May 15	Thailand	Ten	To exchanges views and ideas on hydrological models.
June 1	Indonesia	Three	To exchanges views and ideas on hydraulic and hydrological models and risk management.
June 4	Director General, National Hydraulic Research Institute of Malaysia	Three	To exchanges views and ideas on research and training on water-related disasters and risk management.
June 12	Secretary-general II, Education Ministry of Malaysia	1 名 One	To exchanges views and ideas on research and training on water-related disasters and risk management.
July 2	Officials, Ministry of Energy and Water and other government agencies	Fourteen	To learn about IFAS, BTOP, and disaster risk research.
July 15	Vice Minister, Ministry of Economic Affairs	Ten	To exchanges views and ideas on climate change research and future cooperation.
July 29	Malaysia	Six	SATREPS-Malaysia project
October 26	K-Water, Korea	Two	Meeting
November 11	Department of Water Resources, IWHR, China	One	Meeting
November 12	Yangon Technical University, Myanmar	Four	To learn about the ADB Myanmar project.
November 25	Yogyakarta Disaster Management Agency, Indonesia	Four	To exchange views and ideas on water-related disasters in Japan.
November 27	Ntuo GIS Center Taiwan, ROC	One	Meeting
December 1	National Unit for Disaster Risk Management, etc., Colombia	Three	To learn about hydrometeorological research at ICHARM
	Total	Sixty-eight	

The following sections detail three of the visits listed above.

4.3.1 Visit by NAHRIM-Malaysia DG and delegates

On June 4, 2015, the director general and two other experts of the National Hydraulic Research Institute of Malaysia (NAHRIM) visited ICHARM. They were showed around experiment facilities and discussed water-related hazard and risk management with ICHARM Director for Special Research (now Deputy



Photo-B. 19 Discussion with NAHRIM Director General and delegates from Malaysia

Director) Junichi Yoshitani and other experts.

4.3.2 Visit by secretary-general II of Malaysia's Education Ministry

Dr. Zaini Ujang, a secretary-general II of Malaysia's Education Ministry, visited ICHARM on June 12, 2015, accompanied by Professor Kuniaki Miyamoto, Associate Professor Masaki Utsumi and Assistant Professor Naoko Kaida of the University of Tsukuba. The main purpose of his visit was to



Photo-B. 20 Discussion with Malaysia's Education Ministry officer and visitors from Tsukuba University

learn about educational curriculums and facilities for the National Disaster Research Center, a new institute that Malaysia is currently planning to build in a new academic district called Pagoh.

Dr. Ujang and the professors met with Advisor Kuniyoshi Takeuchi and Research and Training Advisor Shinji Egashira of ICHARM, sharing information and exchanging views.

4.3.3 Visit by Taiwan Vice Minister

On July 15, 2015, Mr. Wei-Fuu Yang, the vice minister of the Ministry of Economic Affairs, and nine Taiwanese delegates visited PWRI. The purpose of this visit was to follow up the joint session for adapting to change during the 7th World Water Forum in Korea, April 2015.

After a courtesy visit to Mr. Koichi Noguchi, a deputy president of PWRI, the minister and the delegates discussed technical issues related to climate change adaptation with ICHARM Director Toshio Koike and other researchers.



Photo-B. 21 Technical discussion at ICHARM with Taiwan Vice Minister

4.4 Participation in international conferences

ICHARM continued participating in many international conferences hosted by UN agencies and other organizations to report its activities and discuss global water issues and to promote its global presence.

4.4.1 Contribution to Expert Meeting on Developing Indicators for Disaster Risk Reduction by UNISDR

The United Nations Office for Disaster Risk Reduction (UNISDR) convened the Expert Meeting on Developing Indicators for Disaster Risk Reduction on July 27-29, 2015, at the UN Geneva Office. ICHARM Chief Researcher Hisaya Sawano attended the meeting.

It was organized to discuss what indicators should be developed to monitor the progress in the implementation of the seven targets and the four priority actions stated in the Sendai Framework for Disaster Risk Reduction 2015-2030, which was adopted at the 3rd UN World Conference on Disaster Risk Reduction. This time, the participants discussed the technical challenges and practical solutions for the indicators.

On September 29-30, experts nominated by their nations met at the UN Geneva Office for the first official meeting of the Open-Ended Intergovernmental Expert Working Group (OIEWG) to develop a set of possible indicators for the Sendai Framework for Disaster Risk Reduction based on the documents compiled from the expert meeting in July. Mr. Sawano also participated in this meeting with other participants. The participants discussed issues on indicators for the seven targets, which will be followed up in the second official meeting scheduled sometime later and unofficial sessions in between.



Photo-B. 22 Open-ended Intergovernmental Expert Working Group (OIEWG)

4.4.2 Workshop on Risks and Impacts on Floods from Extreme Events in ASEAN Countries

ICHARM Chief Researcher Hisaya Sawano was invited, along with representatives from ASEAN countries, to make a presentation in the session of Global and Regional Perspectives. It was held as part of the Workshop on Risks and Impacts on Floods from Extreme Events in ASEAN Countries, organized by the Ministry of Public Works and Housing of Indonesia and held in Bali, Indonesia, on August 5, 2015.

Mr. Sawano addressed the Sendai Framework for Disaster Risk Reduction, adopted at the 3rd UN World Conference on Disaster Risk Reduction, and relevant activities by Japan, as well as collaborative actions between ICHARM and other countries.



Photo-B. 23 Workshop on Risks and Impacts on Floods from Extreme Events in ASEAN Countries

4.4.3 Workshop on “Strengthening Water Partnerships for Climate Change and Disaster Risk Management”

A workshop entitled “Strengthening Water Partnerships for Climate Change and Disaster Risk Management” was held on August 11, 2015, at the ADB headquarters in Manila, the Philippines. It was co-hosted by ADB and MLIT.



Photo-B. 24 Mr. Sawano (far left) delivers a presentation

In this three-part workshop, the third session was held under the theme of Integrated Flood Risk Management. ICHARM Chief Researcher Hisaya Sawano spoke on flood risk management in the Asian region and ICHARM’s assistance in the effort including its involvement in an ADB project in Myanmar.

A panel discussion followed. Mr. Yusuke Amano, the director of the International Affairs Office of the River Planning Division, MLIT, stressed that it is important to archive disaster-related data and use them for the cost-benefit analysis of disaster prevention measures in order to gain public understanding for their implementation. Mr. Sawano also highlighted the necessity of developing risk indicators at each country to reflect the damage characteristics of each place, and explained ICHARM’s efforts in providing assistance for countries working on such indicators.

4.4.4 4th Conference of the Taiwan Integrated Research Programme on Climate Change Adaptation Technology

The 4th Conference of the Taiwan Integrated Research Programme on Climate Change Adaptation Technology (TaiCCAT) was held on September 24-25, 2015, at the National Central University (NCU) in Taoyuan, Taiwan. ICHARM Chief Researcher Yoichi Iwami was invited as a keynote speaker and delivered the presentation entitled “Impact of Climate Change on Water-related Disasters.” Under the subtitle of “Scientific Evidence, Assessment Framework and Decision-Making,” this international conference was attended by roughly 50 researchers from universities and other institutions to make presentations and discussions on environmental monitoring and added value, vulnerability assessment and environmental resilience, climate change adaptation governance, adaptation technology and local action, and other topics.



Photo-B. 25 Mr. Iwami delivers the keynote speech at NCU

Mr. Iwami introduced technologies on which ICHARM has been working, such as downscaling and bias correction for MRI-AGCM, runoff inundation analysis and risk assessment, as well as Japan’s basic policy for climate change adaptation and risk

management. A case study of the Philippines was especially recognized as useful since Taiwan shares similar climate characteristics with the tropical country.

4.4.5 Technical session at the 2nd UN Special Thematic Session on Water and Disasters

On November 18, 2015, the Second United Nations Special Thematic Session on Water and Disasters took place at the UN Headquarters in New York City, the United States. ICHARM Director Toshio Koike and two other ICHARM researchers participated in the event. ICHARM and the Science Council of Japan coordinated and moderated the Science Technology Panel among its technical sessions. This high-level session gathered an audience of more than 400, which consisted of ministers and other high level government officials, and experts and leaders involved in the issues of water and disaster risk reduction worldwide.

In the Opening Plenary, His Imperial Highness the Crown Prince of Japan gave a key note lecture entitled “Quest for Better Relations between People and Water,” a part of which referred to the Integrated Flood Analysis System (IFAS), ICHARM’s research tool. The Opening Plenary was followed by the High Level Panel Debate on Water and Disasters, which Mr. Keiichi Ishii, the minister of MLIT of Japan, attended. After that, two technical panel sessions, Major Group Panel and Science and Technology Panel, were held. Prof. Koike moderated the Science Technology Panel. The Panel, “Science and Technology to Advance DRR on Water,” inviting representatives from UNESCO, WMO and various other leading institutions promoting the advancement of science and technology for disaster risk reduction on water. The Panelist group consolidated their ideas into three main directions: (1) improve data collection, sharing, integration and dissemination; (2) advance inter-disciplinary and trans-disciplinary research on flood and drought risk reduction; and (3) promote regional cooperation by mobilizing existing international initiatives for supporting local/national efforts.



Photo-B. 26 Introduction of Science Technology Panel Session by ICHARM Director Koike

4.4.6 ICHARM contributed the UNESCO ENHANS project in South America

ICARM dispatched experts for the technical and scientific mission to Lima of Peru and Montevideo of Uruguay to advise UNESCO on the implementation of the project entitled "Enhancing natural Hazards resilience in South America (ENHANS)". At the technical workshops held in Lima on September 21-22, 2015, and in Montevideo on December 10-11, 2015, ICHARM provided a presentation on flood disaster risk assessment and identified the needs and capacities of the different



Photo-B. 27 ENHANS workshop in Montevideo, Uruguay

aspects of natural disasters during the workshop. In Montevideo, ICHARM also informed the basic information on IFAS, or ICHARM's hydrological model to facilitate the identification for the pilot river basin in Uruguay. These contributions would be the ICHARM's next step forward in South America to strengthen the network for disaster risk reduction through science and technology.

4.5 Typhoon Committee

The Typhoon Committee (TC) is an inter-governmental body organized under the joint auspices of the Economic and Social Commission for Asia and the Pacific (ESCAP) and the World Meteorological Organization (WMO) in 1968 in order to promote and coordinate the planning and implementation of measures required for minimizing the loss of life and material damage caused by typhoons in Asia and the Pacific. ICHARM has been sending a chief researcher to serve as the chair of the Working Group on Hydrology (WGH).

The 10th Integrated Workshop of the ESCAP/WMO Typhoon Committee was convened on October 26-29, 2015, in Kuala Lumpur, Malaysia, gathering 86 participants from 14 countries.

ICHARM Chief Researcher Yoshio Tokunaga attended the meeting as the chair for WGH and took part in managing the committee and the working group. In the WGH session, the progress of the on-going projects was reported, including large-scale flood forecasting led by China, flood management led by Korea, and social impact assessment of sediment disasters led by NILIM. Mr. Tokunaga spoke on the flood disaster in Joso City, Japan, due to heavy rainfall in the Kanto and Tohoku regions in September 2015 and recent activities of ICHARM. The WGH also discussed future project possibilities.



Photo-B. 28 Participants of Typhoon Committee 10th integrated workshop

5. Local Practices

5.1 UNESCO Pakistan project: Phase 2

From the fiscal 2012 to 2014, ICHARM conducted Phase 1 of the UNESCO Pakistan project, "Strategic Strengthening of Flood Warning and Management Capacity of Pakistan." Subsequently, ICHARM has started Phase 2 of the project since the fiscal 2015.

In Phase 1, ICHARM developed the Indus-IFAS, a version of IFAS specifically tailored for the application to the large part of the Indus River. Short-term workshops were provided for Pakistani engineers to learn how to use IFAS and address other related issues. Some of them were even given participation in ICHARM's master degree

program to learn more about the matter.

In Phase 2, the improvement of Indus-IFAS was planned to further upgrade its functions: specifically, a new function to calculate the impact of snowmelt in the upper Indus River basin and a new interface to use satellite rainfall after correction with ground rainfall. Expansion of the area coverage of IFAS was also planned to include the eastern tributaries of the Indus River in the joint effort with governmental agencies and universities of Pakistan. Training and participation in the master's program for Pakistani engineers were also scheduled in Phase 2. In addition, a new training program for discharge observation using acoustic Doppler current profilers was prepared in order to improve observation accuracy in river discharge and river bed profile.

In the fiscal 2015, the snowmelt calculation function was developed, and possible technical improvements were studied to increase the discharge forecasting accuracy of IFAS. Moreover, the applicability of Indus-IFAS was tested by applying it to the flood that occurred from July to August 2015 in Pakistan, and the results were analyzed to solve issues for better applicability.



Photo-B. 29 Experts involved in the Pakistan project

5.2 ADB Myanmar project (TA8456): Transformation of Urban Management

An on-going ADB project, “Transformation of Urban Management (TA-8456): Part II Flood Management,” aims at strengthening the capacity of the Myanmar government’s organizations in flood risk reduction and response for the three target cities, i.e., Yangon, Mandalay and Mawlamyine. The Myanmar counterpart of this project is the Department of Meteorology and Hydrology (DMH) of the Ministry of Transport. ICHARM has been involved in this project since July 2015 with CTI Engineering International Co., Ltd.

Parts of Myanmar suffered severe flood damage in 2015 due to Cyclone Komen and is still in the process of restoration. Its central and local governments have been showing strong interests and high expectations in strengthening its flood coping capacity that this project is designed to achieve. The following are the accomplishments made during the fiscal 2015:

- (1) Assessment was made to have an accurate understanding of the current conditions and needs associated

with flood management of Myanmar's central and local governments of the three target cities, including its bureau of meteorology and hydrology, and sorted out and analyzed the results of the assessment.

- (2) The technical training was conducted four times during the period between December 2014 and June 2015 for local engineers to learn how to operate the RRI model and a storm-surge model. This training was specifically provided for personnel of the bureau of meteorology and hydrology and the bureau of irrigation to become future instructors. In the training, the trainees were provided with assistance needed to develop the simplified flood and storm-surge simulation models for the river basins where the three target cities were located. A follow-up training workshop was also conducted in October 2015.



Photo-B. 30 Training on the RRI and storm-surge models at the bureau of meteorology and hydrology at Hay Phi Daw on June 15-17, 2015

- (3) A flood model was developed for the river basins where the three target cities were located with a scale adequate to conduct simulation.
- (4) Flood assessment was conducted with the developed RRI and storm-surge models for the three target cities, and drafted flood hazard maps for each target city.
- (5) Meetings were held with Myanmar's governmental agencies to explain the usefulness of flood hazard maps and their production method. The participants also discussed issues on the draft hazard maps and possible ways of using the maps effectively.
- (6) The importance of risk assessment, as well as its method, was also introduced to the government agencies. On-site investigations were conducted in the three target cities in terms of flood risk, and views and ideas were exchanged regarding the current conditions and issues on flood damage reduction.
- (7) Partnerships were strengthened with international organizations, such as UN-Habitat and UNDP, and Japanese organizations, such as JICA and Tokyo University, which have been involved in similar projects.
- (8) Technical assistance was provided for Myanmar's bureau of meteorology and hydrology to perform simulation using

the RRI model on the flood event that was caused by Cyclone Komen and inflicted tremendous damage on many parts of the country during July and August in 2015.



Photo-B. 31 Interim meeting of the TA-8456 Part II project at the bureau of meteorology and hydrology at Hay Phi Daw on October 14, 2015

6. Outreach

6.1 ICHARM Open Day joined by local high school students

ICHARM held the annual “ICHARM Open Day” on April 17, 2015, as part of the open house event of PWRI during the Tsukuba Science & Technology Week in April. ICHARM’s foreign researches and students studying in its master and doctoral degree programs worked hard to prepare oral and poster presentations for this event. This year, 64 high school students and four teachers were invited; 41 from the Ibaraki Prefectural Takezono High School and 23 from the Ibaraki Prefectural Namiki Secondary School.

The ICHARM Open Day began in the ICHARM auditorium, where ICHARM Advisor Kuniyoshi Takeuchi welcomed students from the local schools. Two speakers followed, each delivering a presentation that tapped into students’ curiosity. The first speaker was Research Specialist Liu Tong from China, outlining water-related disasters and projects on which ICHARM is currently working. Ahsan Md Nasif, a doctoral course student from Bangladesh, spoke about water-related and other natural disasters that his country faces after explaining its geography and relevant conditions.

The second part of the event took place in a casual atmosphere, providing the students with an opportunity to encounter a more diverse range of people from ten different countries. The students moved upstairs to an open space, where ICHARM’s master and doctoral students prepared posters mainly to share disaster-related information about their countries.



Photo-B. 32 Presentation by doctoral student Nasif Ahsan



6.2 ICHARM R&D Seminar

ICHARM holds the ICHARM R&D Seminar on an irregular basis as an opportunity for researchers inside and outside ICHARM to learn the latest knowledge and information from domestic and international experts in the field of hydrology and water-related disasters.

During the fiscal 2015, the following seminars were held with many participants from PWRI and NILIM.

No.	Date	Speaker	Speaker's affiliation	Presentation title
52	Aug. 3, 2015	Prof. Kun Yang	Institute of Tibetan Plateau Research, Chinese Academy of Sciences	Climate changes and their impacts on water cycle in the Tibetan Plateau
53	Sep. 7, 2015	Prof. M. Levent Kavvas	Distinguished Professor, University of California, Davis	Maximum Precipitation Estimation over a River Basin by Numerical Atmospheric Modeling
54	Feb. 15, 2016	Prof. Katsumi Mushiake	Prof. Emeritus of University of Tokyo and University of Fukushima	Water Cycle Basic Act: Hopes and Challenges



Photo-B. 34 Distinguished Professor M. Levent Kavvas

6.3 ICHARM Newsletters

ICHARM has published quarterly newsletters since March 2006 to publicize its activities on a regular basis including research, training, local practice, and publication. During the fiscal 2015, the centre published newsletters No.36, 37 and 38 in April, July and October in 2015, respectively, and No.39 in January 2016. Currently, newsletters are sent to about 3,900 subscribers.



No. 36



No. 37



No. 38



No. 39

Number of Alumni of ICHARM training program

(as of February, 2016)

Ph.D. Program "Disaster Management"

Country	Bangladesh	Bhutan	Bosnia-Herzegovina	Brazil	Cambodia	China	Colombia	El Salvador	Ethiopia	Djibouti	Fiji	Guatemala	India	Indonesia	Japan	Kenya	Laos	Malaysia	Maldives	Myanmar	Nepal	Netherlands	Nigeria	Pakistan	Philippines	Republic of Albania	Serbia	Sri Lanka	Tajikistan	Thailand	Timor-Leste	Tunisia	Venezuela	Vietnam	Zimbabwe	Total	(Number of students conferred degree)	
	Year																																					
2010-2013															1																					1	1	
2011-2014								1													1	1															3	1
2012-2015	1											1																									2	2
2013-2016	2											1																									3	-
2014-2017																						1													1		2	-
2015-2018	1																							1													2	-
Total	4	0	0	0	0	0	0	0	1	0	0	2	0	0	1	0	0	0	0	0	2	1	0	1	0	0	0	0	0	0	0	1	0	0	13	4		

M.Sc. Program "Water-related Disaster Management Course of Disaster Management Policy Program"

2007-2008	2				3							1		3						1				1												11	10
2008-2009	2				2			1					1							1										2						9	7
2009-2010	2				1			1					3	1					1					1				2	1							13	12
2010-2011	2				2	1						1		1						1	3			1												12	12
2011-2012	2				2						1			2							2			6	1				1				1	1		19	19
2012-2013	2				1												2		1	1			1		1	1	1						1			12	12
2013-2014	2				1		1								1				1		1		1	2			2						1			12	12
2014-2015	1					1					1		2			3				1			2					2								13	13
2015-2016	2			1															1	1	1			2	1			2			1				1	13	-
Total	17	0	0	1	0	11	3	1	2	0	2	1	3	7	4	4	0	2	1	6	9	0	1	12	6	1	1	10	0	3	1	1	2	1	1	114	97

JICA training program "Flood Hazard Mapping"

2004				2	2							2			3	2							2					2						1		16	
2005				2	2								2			2	2							3					1						2		16
2006				2	2								2			2	2						2					2							2		16
2007				2	2								3			2	3						2					1	3						2		20
2008				1	2												2	2					1						1						1		10
Total				9	10							9				11	11						10			1		9						8		78	

JICA training program "Local Emergency Operation Plan with Flood Hazard Map"

2009	1	1										2			1				1				1					1	1	1						10
2010	1	2										2			1				1	1	1			1				1	1	1						12
2011	1	2										2			2				1				1					1	1							11
Total	3	5										6			4				3	1			3				3	3	2						33	

JICA training program "Capacity Development for Flood Risk Management with IFAS"

2012(A)	3														3								2	2												13
2012(B)																																			7	7
2013	3														3								2	3					2					3		16
2014	3	3													3								3	3					3					2		20
2015		1	2												2					4			2	4				2								20
Total	9	4	2												11				4			9	12		2	10		12						76		

JICA training program "Capacity Development for Adaptation to Climate Change"

2010	1											3											1					1							1	7
------	---	--	--	--	--	--	--	--	--	--	--	---	--	--	--	--	--	--	--	--	--	--	---	--	--	--	--	---	--	--	--	--	--	--	---	---

UN/ISDR Training course "Comprehensive Tsunami Disaster Prevention"

2008												2	4										2													11
------	--	--	--	--	--	--	--	--	--	--	--	---	---	--	--	--	--	--	--	--	--	--	---	--	--	--	--	--	--	--	--	--	--	--	--	----

UNESCO Pakistan Project workshop

2012																								6												6	
2013																									5												5
Total																								11												11	

Country	Bangladesh	Bhutan	Bosnia-Herzegovina	Brazil	Cambodia	China	Colombia	El Salvador	Ethiopia	Djibouti	Fiji	Guatemala	India	Indonesia	Japan	Kenya	Laos	Malaysia	Maldives	Myanmar	Nepal	Netherlands	Nigeria	Pakistan	Philippines	Republic of Albania	Serbia	Sri Lanka	Tajikistan	Thailand	Timor-Leste	Tunisia	Venezuela	Vietnam	Zimbabwe	Total
Total	34	9	2	1	9	21	3	1	3	1	2	3	5	29	5	15	15	13	3	13	12	1	10	27	29	1	1	19	3	25	1	1	3	22	1	343

ICHARM Publication List FY 2014

No.	Category	Title	Title (tentative English name)	Author 1	Author 2	Author 3	Author 4	Author 5	Books or Conference	Publisher or Conference organizer	Vol.	Start Page	End Page
1	1. Journal	A comparative study of fuzzy logic systems approach for river discharge prediction		A.W. Jayawardena	ED.P. Perera	Bing Zhu	J.D. Amarasekara	V. Vereivalu	Journal of Hydrology		Volume 514	85	101
2		Effects of livelihood strategies on mangrove-forest resource Do the consumption behaviour of households jeopardise the forest resource base?		Md. Nasif Ahsan					Management of Environmental Quality- An International Journal		Vol.25 (6)	696	711
3		Community-based flood damage assessment approach for lower West Rapti River basin in Nepal under the impact of climate change		Duminda PERERA	Ahiko HIROE	D. Shrestha	K. Fukami	D. B. Basnyat	Natural Hazards	Springer	Vol. 75 No 1	669	699
4		Fundamental Analysis for Flood Risk Management in the Selected River Basins of Southeast Asia		Badri Bhakta Shrestha	Toshio Otaozumi	Mamoru Miyamoto	Seishi Nabesaka	Shigenobu Tanaka, Ai Sugiura	Journal of Disaster Research	Fuji Technology Press Ltd.	9 (5)	858	869
5		A Quantitative Estimate of Vulnerable People and Evaluation of Flood Evacuation Policy.		Karina Vink	Kuniyoshi Takeuchi	Kelly M. Kibler			Journal of Disaster Research		Vol.9 (No.5)	887	900
6		Transboundary water law and vulnerable people: legal interpretations of the 'equitable use' principle.		Karina Vink					Water International		Volume 39, Issue 5	743	754
7		Quantification of the adverse effects of drought caused by water supply restrictions considering the changes in household water consumption characteristics		Morimasa Tsuda	Shuzo Nishida	Masayasu Irie			Water Science & Technology: Water Supply	IWA	Vol.14.5	743	750
8		Fuzzy logic based flood forecasting model for the Kelantan River basin, Malaysia		Duminda PERERA	Livia Lahat				Journal of Hydro-environment Research	Elsevier			
9		Estimation of Water Surface Elevation on Inundated Area Using Satellite data		Atsuhiro Yorozuya	H. Kamimura	T. Okazumi	Y. Iwami	Y. Kwak	Journal of Hydrology and Environment Research	EnviroWater Sydney		2	16
10		Model study of the impacts of future climate change on the hydrology of Ganges-Brahmaputra-Meghna basin		Muhammad Masood	Pat J.-F. Yeh	Naota Hanasaki	Kuniyoshi Takeuchi		Hydrology and Earth System Sciences (HESS)	Copernicus Publications		19	770
11		Direct measurement of river-bed form resistance in rivers with sand waves		Yoshiki MOTONAGA	Atsuhiro YOROZUYA	Yoichi IWAMI	Maasahige YAMASAKA		River Flow 2014-Schleiss et al. (Eds) ©2014 Taylor & Francis Group, London			273	278
12	2. Paper	流量算出に関する既往モデルの適用性に関する研究		本永良樹	篤矢敬啓	岩見洋一	山坂昌成		河川技術論文集	土木学会	Vol.20	31	36
13		タイ2011年洪水により影響を受けた日系企業の連鎖被害特性分析		萩原葉子	栗林大輔	面積敏雄	中須正		河川技術論文集	土木学会	Vol.20	397	402
14		2011年台風12号・15号を対象としたアンサンブル降水流出予測実験		牛山朋来	佐山敬洋	岩見洋一	三好建正		河川技術論文集	土木学会	Vol.20	455	460
15		複数の洪水イベントにおける分布型流出モデルの最適パラメータの推定		宮本守	松本和宏	津田守正	山影謙	岩見洋一	土木学会論文集B1(水工学)	土木学会	Vol. 71, No. 4	1,271	1,276
16		分布型流出モデルのパラメータ同定への数理最適化手法の適用		松本和宏	宮本守	山影謙	津田守正	岩見洋一	土木学会論文集B1(水工学)	土木学会	Vol. 71, No. 4	1,277	1,282
17		山体地下水の流動を表現する分布型降雨流出モデルの開発		佐山 敬洋	小杉賢一朗	岩見 洋一			土木学会論文集B1(水工学)	土木学会	Vol. 71, No. 4	1,331	1,336
18		INFLUENCE OF LATERAL BED SLOPE ON EROSION-DEPOSITION PROCESSES IN SUSPENDED-SEDIMENT DOMINATED RIVERS		Robin K. BISWAS	Shinji EGASHIRA	Atsuhiro Yorozuya			Journal of Japan Society of Civil Engineers, Ser. B1 (Hydraulic Engineering)	JSOE	Vol. 71, No. 4	1,871	1,876
19		インドネシア・ソロ川流域における洪水流量及び氾濫量に着目した気候変動影響評価		工藤俊	佐山敬洋	長谷川聡	岩見洋一		土木学会論文集B1(水工学)	土木学会	Vol. 71, No. 4	1,1321	1,1326

20	3. Abstract	Development of Flood Risk Assessment Method for Data-Poor River Basins: a Case Study in the Pampanga River Basin, Philippines	Badri Bhakta Shrestha	Toshio Okazumi	Mamoru Miyamoto	Hisaya Sawano	Proceeding of 6th International Conference on Flood Management (ICFM6)	ICFM6		
21		DEVELOPMENT OF A FLOOD FORECASTING SYSTEM ON UPPER INDUS CATCHMENT USING IJAS	Ai Sugiyama	S.Fujijoka	S.Nabesaka	M.Tsuda	Proceeding of 6th International Conference on Flood Management (ICFM6)	ICFM6		
22		METHOD FOR DEVELOPING HAZARD MAP DUE TO DEBRIS FLOW PREDICTION	Escalona Martinez Rosiret	Atsuhiko Yoroziya	Shinji Egashira	Yoichi Iwami	Proceeding of 6th International Conference on Flood Management (ICFM6)	ICFM6		
23		Assessment of climate change impact on hydrology through addressing model parameter-related uncertainty: case study on Ganges-Brahmaputra-Meghna (GBM) basin	Muhammad Masood	Pat J.-F. Yeh	Naota Hanasaki	Kuniyoshi Takeuchi	Proceedings of the 16th International Summer Symposium	JSCE	45	46
24		Water Discharge Measurements with ADCP in High Speed Flow with High Sediment Concentration	A. Vorozuya	Y. Motonaga	Y. Iwami	T. Furuyama	9th International Symposium on Ultrasonic Doppler Methods for Fluid Mechanics and Fluid Engineering		21	24
25		Field observation of the river, flood flow and suspended sediment distribution using ADCP	Masahiro Hashiba	Tatsuya Kai	Atsuhiko Yoroziya	Yoshiaki Motonoiga	9th International Symposium on Ultrasonic Doppler Methods for Fluid Mechanics and Fluid Engineering		125	128
26		Current Issues Regarding the Incident Command System in the Philippines	Miho OHARA	Hisaya SAWANO			Proceedings of the International Emergency Management Society 2014 Annual Conference			
27		Point- and non-point source nutrient loading simulation for the Takasaki River basin, Chiba - Japan	Duminda PERERA	Y. Iwami	K. Fukami		Proceeding Vol. 1, 9th IWA International Symposium on Waste Water Management Problems in Agro-Industries	IWA	622	629
28		Flood Hazard Modelling and Flood Damage Assessment for the Kalani River Basin, Sri Lanka	K. M. N. K. Ranasinghe	Duminda Perera	T. Sayama	S. Tanaka	Book of Abstracts 5th International conference on sustainable build environment 2014	ICSBE	202	210
29		Agricultural flood risk assessment in the Pampanga river basin of the Philippines	Badri Bhakta Shrestha	Hisaya SAWANO	Miho Ohara	Naoko Nagumo	Proceeding of the Tokyo Conference on International Study for Disaster Risk Reduction and Resilience			
30		Simplified Flood Hazard Assessment Methodology: A step towards Global Risk Assessment.	Gusev M.	Kwak Y.	Okazumi T.	Lee S.	Proceedings of the Tokyo Conference on International Study for Disaster Risk Reduction and Resilience			
31	4. Article, others	国連世界防災会議へ向けてのICHARMの活動	栗林大輔	岡積敏雄	李商恩	GUSYEV MAKSYM	土木技術資料	土木研究センター	56(6)	13
32		アジアにおける水災害リスク評価と適応策の研究	上野山智也	岩見洋一	岡積敏雄	安田成夫	土木技術資料	土木研究センター	56(6)	17
33		降雨流出定率(RR)モデルの開発と応用	佐山敬洋	岩見洋一			土木技術資料	土木研究センター	56(6)	21
34		台風30号によるフィリピン国における高潮災害と予警報活動	宮本 守	田島芳満	安田誠宏	信尚道	土木技術資料	土木研究センター	56(6)	29
35		衛星雨量データの土砂災害危険度分析への活用	清水孝一	岡積敏雄	石塚忠範		土木技術資料	土木研究センター	56(9)	13
36		MODIS時系列画像と数値標高データを用いた流域の洪水監視抽出～2011年タイ国チャイナプラヤ川大洪水～	郭 栄珠	萬矢敬啓	岩見洋一		土木技術資料	土木研究センター	56(9)	17
37		多言語で利用可能な洪水災害準備体制指標の開発	南雲直子	中須正	岡積敏雄	清水孝一	土木技術資料	土木研究センター	56(9)	21
38		パンラテシムにおける効率的な洪水予警報システム構築のための総合意思決定手法の開発	宮本 守	ラビンドラ オスライ	岡積敏雄		土木技術資料	土木研究センター	56(10)	35
39		隠れた情報下における洪水リスクアセスメントで生じる不確実性の評価	岡積敏雄	宮本 守	ジュレスサバ リバクタ	グスエフ マクシム	土木技術資料	土木研究センター	56(11)	13
40		インドス川流域を対象とした洪水予警報システムの構築	津田守正	杉浦愛	佐山敬洋	岩見洋一	土木技術資料	土木研究センター	56(11)	37

41	5. PWRI technical Note	タイ工業団地における洪水災害に対する教訓集 ～2011年洪水の経験から～	澤野久弥	栗林大輔	萩原葉子				土木研究所資料第4291号	土木研究所		
42		ICHARM国際シンポジウム 実施報告書	村瀬 勝彦	栗林大輔					土木研究所資料第4296号	土木研究所		

ICHARM Publication List FY 2015

No.	Category	Title	Title (tentative English name)	Author 1	Author 2	Author 3	Author 4	Author 5	Books or Conference	Publisher or Conference organizer	Vol.	Start Page	End Page
1	1. Journal	Point and non-point source nutrient loading simulation for the Takasaki River Basin, Chiba-Japan		Duninda PERERA					Water Practice & Technology Journal	International Water Association Publishing	Vol. 10 No. 2	328	338
2		Hydrological recurrence as a measure for large river basin classification and process understanding		Rodrigo Fernandez	Sayama T.				Hydrology and Earth System Sciences (HESS)	Copernicus Publications		19	1919
3		Current Issues Regarding the Incident Command System in the Philippines		Miho OHARA	Hisaya Sawano				Journal of Disaster Research	Fuji Technology Press Ltd.	Vol.10, No.2	238	245
4		Integrated Flood Management in developing countries: balancing flood risk, sustainable livelihoods, and ecosystem services		Juarez Lucas, A. M.	Kibler, K. M.				International Journal of River Basin Management			1	13
5		Flood damage assessment in the Pampanga river basin of the Philippines		Badi Bhakta Shrestha	Toshio Okazumi	Mamoru Miyamoto	Hisaya Sawano		Journal of Flood Risk Management	John Wiley & Sons Ltd			
6		An emergency response-type rainfall-runoff-inundation simulation for 2011 Thailand Floods		Takahiro Sayama	Yuya Tatebe	Shigenobu Tanaka			Journal of Flood Risk Management	John Wiley & Sons Ltd			
7		Assessing the vulnerability of different age groups regarding flood fatalities: case study in the Philippines		Sangeun Lee	Karina Vink				Water Policy	IWA	17 (6)	1045	1061
8		Factors affecting the evacuation decisions of coastal households during Cyclone Aila in Bangladesh		Md. Nasir Ahsan	Kuniyoshi Takeuchi	Karina Vink	Jeroen Warner		Environmental Hazards	Taylor and Francis			
9		Rapid Damage Assessment of Rice Crop for Large-scale Flood in the Cambodian Floodplain Using Temporal Spatial Data		Youngjoo Kwak	Badi Bhakta Shrestha	萬矢敬啓	澤野久弥		IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing	IEEE	Vol. 8, No. 7	3700	3709
10	2. Paper	RICE-CROPS FLOOD DAMAGE ASSESSMENT IN THE PAMPANGA RIVER BASIN OF THE PHILIPPINES		Badi Bhakta Shrestha	Hisaya Sawano	Miho Ohara	Naoko Nagumo		Advances in River Engineering	JSCE		21	497
11		CCTVカメラと遠赤外線カメラを用いた画像処理型流速測定法の実用化		梅田真吾	柏田仁	島本重寿	宮谷綾子	浜口善一郎・山崎裕介・萬矢敬啓	河川技術論文集	土木学会	第2巻	99	104
12		CCTVカメラを用いた水位観測精度の向上に向けた検討		山田真也	坂井建太	梅田真吾	渡部康祐	配島俊一・萬矢敬啓	河川技術論文集	土木学会	第2巻	61	66
13		洪水中の河床高と粗度係数の変化が河川流量の算定に及ぼす影響		小関博司	萬矢敬啓	工藤俊	岩見洋一		土木学会論文集G(環境)	土木学会	Vol.71 No. 5	L7	L15
14		上水道の用途別日使用水量の時間的配分による用途別日使用水量の推計		津田守正	岩見洋一				土木学会論文集G(環境)	土木学会	Vol. 71, No. 6	IL387	IL395
15		Enhancement of Flood Countermeasures of Japanese-Affiliated Firms based on the Lessons Learned from the 2011 Thai Flood	2011年々々洪水の教訓を活かした強国日本企業の水害対策強化	萩原 暉子 Yoko Hagiwara	栗林大輔	澤野久弥			地域安全学会論文集 No.27 Journal of Social Safety Science No.27	地域安全学会 Institute of Social Safety Science	No. 27	237	244
16		Study on Basic Flood Risk Assessment Method in Asian Flood Prone Area with Limited Regional Data-Case Study in Pampanga River Basin, Philippines-	地域データの乏しいアジアの洪水常襲地域帯における簡便な洪水リスクの評価手法に関する研究-フィリピン共和国/パンプンガ川流域を対象として-	大原美保 Miho OHARA	南直子	Badi Bhakta SHRESTHA	澤野久弥		地域安全学会論文集 No.27 Journal of Social Safety Science No.27	地域安全学会 Institute of Social Safety Science	No. 27	225	235
17		Development of Application for Building Damage Inspection after Flood-Triak in Inundated Area due to Heavy Rain in kanto and Tohoku Region in September, 2015-	水害向け建物検査設定アプリケーションの開発 平成27年9月関東・東北豪雨の浸水地域での試用-	大原美保	藤生慎	澤野久弥	重川希志哉	田中聡	地域安全学会第37回研究発表会(秋季)梗概集	地域安全学会 Institute of Social Safety Science	No.37	61	64
18		Geographical Characteristics of Flood Occur in Joso City, Ibaraki Prefecture in September, 2015.	平成27年9月に茨城県常総市で発生した洪水氾濫の地理的特徴	南直子	大原美保	澤野久弥	河本尋子	田中聡	地域安全学会第37回研究発表会(秋季)梗概集	地域安全学会 Institute of Social Safety Science	No.37	69	72
19		Sediment runoff processes and possibility of sediment control structures in the 2013 event at Izu-Oshima		江頭進治 Shinji Egashira	Hiroshi TAKEBAYASHI	Masato SEKINE	Nobutomo OSANA		International Journal of Erosion Control Engineering (IJEEICE)	公益社団法人砂防学会 Japan Society of Erosion Control Engineering			
20		Prompt Proxy Mapping of Flood Damaged Rice Fields using MODIS-derived Indices		Youngjoo Kwak	Bhuvan Arifuzmanan	Yoichi Iwami			Remote Sensing	MDPI	Vol. 7, No. 12	15969	15988

21	Development of nitrate response curves using MODFLOW-MODPATH, MODFLOW-MT3DMS, and lumped parameter model.	Quayev M.	Abrams D.	Morgenstern U.	Stewart M.	Proceedings of MODFLOW and More 2015			134	137
22	Comparison of methodologies for generating transit time distributions in watersheds. Insights for upscaling.	Abrams D.	Gusyev M.	H. Haitjema		Proceedings of MODFLOW and More 2015			494	498
23	Agricultural flood and drought risk reduction by a proposed multi-purpose dam: A case study of the Malwathoya River Basin, Sri Lanka	K. Navarathinam	Maksym Gusyev	Akira Hasegawa	馬籠純 Jun Magome	21st International Congress on Modelling and Simulation (MODSIM2015)	Modelling and Simulation Society of Australia and New Zealand Inc.		1600	1606
24	Construction of depth-discharge relation for inundation simulation	Shun Kudo	Atsuhuro Yorozuya	Hiroshi Koseki	Yochi Iwami	21st International Congress on Modelling and Simulation (MODSIM2015)	Modelling and Simulation Society of Australia and New Zealand Inc.		2137	2143
25	Flood and drought assessment with dam infrastructure: A case study of the Ba River basin, Fiji	Nawai J	Maksym Gusyev	Duminda Perera	長谷川聡 Akira Hasegawa	21st International Congress on Modelling and Simulation (MODSIM2015)	Modelling and Simulation Society of Australia and New Zealand Inc.		1607	1613
26	Drought assessment in the Pampanga River basin, the Philippines - Part 1: Characterizing a role of dams in historical droughts with standardized indices	Makym Gusyev	Akira Hasegawa	馬籠純 Jun Magome	栗林大輔 Daisuke Kuribayashi	21st International Congress on Modelling and Simulation (MODSIM2015)	Modelling and Simulation Society of Australia and New Zealand Inc.		1586	1592
27	Drought assessment in the Pampanga River basin, the Philippines - Part 2: A comparative SPI approach for quantifying climate change hazards	長谷川聡 Akira Hasegawa	Makym Gusyev	牛山朋来 Tomoki Ushiyama	岩見洋一 Yochi Iwami	21st International Congress on Modelling and Simulation (MODSIM2015)	Modelling and Simulation Society of Australia and New Zealand Inc.		2388	2394
28	River discharge simulation of a distributed hydrological model on global scale for the hazard quantification	Magome J.	Gusyev M.A.	Hasegawa A.	K. Takeuchi	21st International Congress on Modelling and Simulation (MODSIM2015)	Modelling and Simulation Society of Australia and New Zealand Inc.		1593	1599
29	Hydrologic sensitivity of flood runoff and inundation: 2011 Thailand floods in the Chao Phraya River basin	Takahiro Sayama	Yuya Tatebe	Yoichi Iwami	Shigenobu Tanaka	An interactive open-access journal of the European Geosciences Union	Natural Hazards Earth System Science			
30	出水時に河川を流下する土粒子の沈降現象	海野 仁				環球水理部会研究会2015 in 京都	土木学会水工学委員会環球水理部会			
31	Gaps and Opportunities of Assimilating Multi-Frequency Passive Microwave Satellite Observations within a Mesoscale Model for Improving the Predictability of Extreme Rainfall Events in Developing Regions	Mohamed Rasmy	岩見洋一 Yochi Iwami	小池俊雄 Toshiro Koike		Earth Observation for Water Cycle Science 2015, 20-23 October 2015, ESA-ESRIN, Italy	European Space Agency (ESA) Global Energy and Water Cycle Exchange Project (GEWEX)			
32	Prediction of debris-flow and flood characteristics caused by outburst of glacial lake	Badi Bhakta Shrestha	Hajime Nakagawa	Hisaya Sawano		Proceeding of DFHM-6	DFHM-6			
33	Fluvial Fan Process due to Swing Phenomena	Rosiret ESCALONA	Atsuhuro YOROZUYA	Shinji EGASHIRA	Yochi IWAMI	Proceeding of DFHM-6	DFHM-6			
34	阿羅野川における降雨流出シミュレーションの適用について	栗林大輔	佐山敬洋	近者敦彦	中村要介	水文・水資源学会2015年度研究発表要旨集	水文・水資源学会		210	211
35	2011年チャオプラヤ川洪水による在タイ日系企業の浸水の有無と洪水対策実施率の比較	萩原葉子	栗林大輔	澤野久弥		水文・水資源学会2015年度研究発表要旨集	水文・水資源学会		114	115
36	利根川流域における温暖化実験結果の力学的タフネスケーシング	牛山朋来 Tomoki Ushiyama	長谷川聡 Akira Hasegawa	岩見洋一 Yochi Iwami		日本気象学会2015年度秋季大会 2015.10.28-30. 京都テルサ、予集	公益社団法人 日本気象学会 Meteorological Society of Japan			
37	気候変動評価のためのSPIの改良	長谷川聡 Akira Hasegawa	Makym Gusyev	岩見洋一 Yochi Iwami		日本気象学会2015年度秋季大会 2015.10.28-30. 京都テルサ、予集	公益社団法人 日本気象学会 Meteorological Society of Japan			
38	Integrated Approach of Inundation Analysis using Hydrological Observation and Hydraulic Analysis in Data Sparse Basins	轟夫敬啓 Atsuhuro Yorozuya	工藤俊 Shun Kudo	小関博司 Hiroshi Koseki	岩見洋一 Yochi Iwami	21st International Congress on Modelling and Simulation (MODSIM2015)				
39	Flood and drought hazard reduction by proposed dams and a retarding basin: A case study of the Upper Ewaso Ng'iro North River basin, Kenya.	Othiamba C.	Gusyev M.	Magome J	K. Takeuchi	21st International Congress on Modelling and Simulation (MODSIM2015)				
40	A comparative SPI approach for qualifying historical and on-going droughts in the Pampanga River basin, the Philippines.	Hasegawa A.	Gusyev M.	Ushiyama T.	Y. Iwami	21st International Congress on Modelling and Simulation (MODSIM2015)				
41	Drought assessment in the Pampanga River basin, the Philippines - Part 3: Evaluating climate change impacts on dam infrastructure with standardized indices	Gusyev M.	Hasegawa A.	Magome J.	Umino H	21st International Congress on Modelling and Simulation (MODSIM2015)				
42	Constructing damages functions for paddy field hit by water-related disasters based on MODIS FPAR and a distributed hydrological model in data sparse context: the example of Solo River basin, Indonesia	Sugiura A.	Kudo S.	Gusyev M.	A. Yorozuya	21st International Congress on Modelling and Simulation (MODSIM2015)				

43	Effectiveness of water infrastructure for river flood management: Part 1 – Flood Hazard Assessment using hydrological models in Bangladesh	Gusev M.A.	Kwak Y.	Khairul I.	Arifuzzaman B.	Magome J.	Oral Presentation at the 28th IUGG General Assembly 2015			
44	Effectiveness of Water Infrastructure for River Flood Management: Part 2 – Flood Risk Assessment and Changes in Bangladesh	Kwak Y.	Gusev M.A.	Arifuzzaman B.	Khairul I.	Iwami Y.	Poster at the 28th IUGG General Assembly 2015			
45	Rainfall-Runoff-Inundation Modeling and Sensitivity Analysis of Flooding in Asian Monsoon River Basins.	Takahiro Sayama	Shun Kudo	Yusuke Yamazaki	Yoichi Iwami		Asia Oceania Geosciences Society (AOGS) 12th Annual Meeting		Asia Oceania Geosciences Society AOGS2015	
46	Probabilistic rainfall and streamflow prediction using ENKF for a narrow heavy rainfall event in a Japanese small basin	Tomoki Ushiyama	Takahiro Sayama	Yoichi Iwami			Asia Oceania Geosciences Society (AOGS) 12th Annual Meeting		Asia Oceania Geosciences Society AOGS2015	
47	Dynamical Downscaling and Bias Correction of Rainfall in the Pampanga Basin, Philippines, for Flood Risk Change on Global Warming	Tomoki Ushiyama	Mamoru Miyamoto	Akira Hasegawa	Yoichi Iwami		Asia Oceania Geosciences Society (AOGS) 12th Annual Meeting		Asia Oceania Geosciences Society AOGS2015	
48	Understanding the sensitivity of river bathymetry in inundation analysis	Atsuhiko Yorozuya	Duminda Perera	Shun Kudo	Yoichi Iwami		Asia Oceania Geosciences Society (AOGS) 12th Annual Meeting		Asia Oceania Geosciences Society AOGS2015	
49	メコン川の流水抵抗を踏まえた流量の推定	工藤俊	萬矢教啓	小関博司	岩見洋一	中津川誠	第23回地球環境シンポジウム講演集		土木学会	11
50	Characteristics of fluvial landforms and floods in the Pampanga River basin, central Luzon		Naoko NAGUMO						XIX INQUA Congress	T00182
51	ルソン島中部における洪水常襲地帯の浸水特性に応じた地域区分	南雲直子	大原美保	パトリック・シュレスタ	澤野久弥		日本地理学会発表要旨集		日本地理学会	88
52	洪水常襲地帯における洪水災害対応シナリオ作成手法の提案 –フィリピン共和国ハンバンガ川流域での取り組み–	大原美保	パトリック・シュレスタ	南雲直子	澤野久弥		第70回土木学会年次学術講演会講演概要集		土木学会	477
53	災害リスクの不確実性に対する統合洪水管理に関する考察	村瀬勝彦					第70回土木学会年次学術講演会講演概要集		土木学会	409
54	Point and Non-point Source Pollution Assessment Study	E.D.P.Perera	Y.Iwami	Y.Chida			Unesco International Scientific Symposium			
55	Drought assessment using tritium river water measurements for existing dam infrastructure in the Ishikari River basin, Japan	Gusev M.A	U. Morgenstern	M. Stewart	Y. Yamazaki	K. Kashiwaya	UNESCO Workshop on the Strategic Strengthening for South-South Cooperation for Modelling and Managing Hydro-Hazards			
56	River runoff and nitrate loading simulation for the land use changes in the Takasaki River basin in Chiba, Japan	E.D.P.Perera	Y.Iwami	Y.Chida			2nd International Conference on Land Use and Water Quality-Agriculture Production and Environment			
57	巨大都市で制定される水需の現状と課題	大原美保	澤野久弥	小林直			日本地震工学会・大会 – 2015 概要集		日本地震工学会	11
58	ハンガリー共和国の広域洪水及び水田被害	郭 栄珠	朴 鍾杰	Yoichi Iwami			日本リモートセンシング学会第59回学術講演会論文集		日本リモートセンシング学会	61
59	USABILITY ON DIFFERENT TYPES OF RAINFALL DATA FOR FLOOD FORECASTING AND CHARACTERISTICS OF THE 2014 FLOOD IN THE KELANTAN RIVER BASIN, MALAYSIA	宮本守	岩見洋一	Lanyah Mohd Sidek			The 3rd International Conference on Water Resources (ICWR-2015), 24-25 November 2015, Langkawi, Malaysia		University Technology Malaysia (UTM), DID	
60	International Flood Initiative activities toward robustness for flood management	村瀬勝彦	岩見洋一	澤野久弥	徳永良雄	加本実	World Engineering Conference and Convention 2015 WECC Kyoto (November 28-December 4, 2015, Kyoto)		World Federation of Engineering Organizations	
61	Large scale flood predictions using a Rainfall-Runoff-Inundation Model and satellite based information.	佐山敏洋	工藤俊	山崎祐介	岩見洋一		World Engineering Conference and Convention 2015 WECC Kyoto (November 28-December 4, 2015, Kyoto)		World Federation of Engineering Organizations	
62	Estimation of daily sectoral water consumption from monthly data during water supply restrictions	津田守正	岩見洋一	Yusuke Yamazaki	Yoichi Iwami		The 6th IWA-ASPIRE Conference & Exhibition, 20-24 September 2015 Beijing, China		the International Water Association	
63	Estimation of daily household water consumption during water supply restrictions	Morimasa Tsuda	Y. Iwami				The 6th IWA-ASPIRE Conference and Exhibition			

64	Large-scale Flood Monitoring: Where is the most exposed to large flood in Asia?	Youngjoo Kwak	Jonggeol Park	Yoichi Iwami					American Geophysical Union (AGU) Fall Meeting2015 Abstract	American Geophysical Union (AGU)		NH51E-1955
65	Generation of the relationship between glacier area and volume for a tropical glacier in Bolivian Andes	Tong Liu	Tsuyoshi Kinouchi	Akira Hasegawa	Yoichi Iwami, Yoshihiro Asaoka, Javier Mendoza				American Geophysical Union (AGU) Fall Meeting2015 Abstract	American Geophysical Union (AGU)		C23C-0800
66	Drought assessment using tritium river water measurements for existing dam infrastructure in the Ishikari River basin, Japan	Gusyeve M.A.	Morgenstem U.	Stewart M.K.	Kashwaya K.				American Geophysical Union (AGU) Fall Meeting2015 Poster Abstract	American Geophysical Union (AGU)		H13I-1694
67	Global Hydrological Hazard Evaluation System (Global BTOP) Using Distributed Hydrological Model	Magome J.	Gusyeve M.	Hasegawa A.	Takeuchi K.				American Geophysical Union (AGU) Fall Meeting2015 Poster Abstract	American Geophysical Union (AGU)		NH13C-1950
68	Global Floods and Droughts Simulation to Support International Flood Initiative and International Drought Initiative of the UNESCO International Hydrological Program.	Takeuchi K.	Gusyeve M.	Magome J.	M. Masood				American Geophysical Union (AGU) Fall Meeting2015 Poster Abstract	American Geophysical Union (AGU)		H51A-1355
70	New mechanism under International Flood Initiative toward robustness for flood management in the Asia Pacific region	村瀬勝彦 Masahiko Murase	小池俊雄 Toshio Koike						AGU Fall Meeting, 14-18 December 2015, San Francisco, USA	American Geophysical Union		
71	Effectiveness of Water Infrastructure for river flood management: Part 1 – Flood Hazard Assessment using hydrological models in Bangladesh.	Gusyeve M.	Kwak Y.	Khairul Md. I.	H. Sawano, J. Magome, K. Takeuchi				Proceedings of IAHS 2015		370	75
72	Effectiveness of Water Infrastructure for River Flood Management: Part 2 – Flood Risk Assessment and Changes in Bangladesh.	Kwak Y.	Gusyeve M.A.	Arifuzzaman Md.A.	Y. Iwami, K. Takeuchi				Proceedings of IAHS 2015		370	83
73	Formation and migration of sandbars in suspended sediment dominated Brahmaputra River	R. K. Biswas	A. Yorozyua	S. Egashira	Y. Iwami				Proceedings of the 9th symposium of the RCEM 2015	OREAR		
74	STUDY ON SANDBAR FORMATION AND MIGRATION IN THE SUSPENDED SEDIMENT DOMINATED BRAHMAPUTRA RIVER	R. K. Biswas	A. Yorozyua	S. Egashira					Proceeding of the 17th Summer Symposium	JSCE		
75	近年の台風委員会 (Typhoon Committee) の活動	加本実							水文・水資源学会誌		Vol.28 No.3	131
76	2013-2014 修士課程「防災政策プログラム」水災害リスクマネジメントコース」業務報告書	白井隆							土木研究所資料第4299号	土木研究所		
77	Report on 2013-2014 M.Sc. Program. "Water-related Disaster Management Course of Disaster Management Policy Program."	白井隆							土木研究所資料第4306号	土木研究所		

UNESCO-related activities

1. Participations in meetings related to UNESCO and UNESCO-IHP

Prof. Koike, Director, and Prof. Takeuchi, Advisor, have joined in the following meetings;

Year	Date	Title	Organizer	Venue	Attendance from ICHARM
2014	① 16-17 June ② 18-20 June	①11th UNESCO/IAHS Kovacs Colloquium ②21st session of the IHP Intergovernmental Council	①UNESCO/IAHS Kovacs Colloquium ②UNESCO IHP	Paris, France	Prof. Takeushi, Advisor
2015	4-5 March	Regional Dialogue on Sustainability Science Policy to Support the Post-2015 Development Agenda	UNESCO IHP RSC for Southeast Asia and the Pacific	Kuala Lumpur, Malaysia	Prof. Takeushi, Advisor
2015	14-Apr	Panelists of Drought Session in WWF7 "Advances in Drought Analysis Tools and Coping Strategies"	·Coordinator : RCUWM ·Co-Coordinator : IWHR)	Daegu, Republic of Korea	Prof. Koike, Director
2015	16-Apr	High-Level Panel 'Water Security and Sustainable Development: Co-operation among Disciplines and Stakeholders'	UNESCO IHD/IHP	Daegu, Republic of Korea	Prof. Takeushi, Advisor
2015	13-14 June	International Drought Initiative (IDI) Expert Group	RCUWM	Tehran, Iran	Prof. Koike, Director
2015	19-22 October	The 23rd IHP Regional Steering Committee Meeting for Southeast Asia and the Pacific, UNESCO-IHP	UNESCO IHP RSC for Southeast Asia and the Pacific	Medan, Indonesia	Prof. Takeushi, Advisor

2. Collaboration with other UNESCO institutes/ centres

Prof. Koike, Director, is appointed as a member of the following UNESCO category 2 institutes and joined the following governing board;

- **International Centre for Water Resources and Global Change in Koblenz, Germany**
9 June, 2015 Governing Board Meeting
- **Regional Centre for Training and Water Studies of Arid and Semiarid Zones (RCTWS) in Egypt**
27 Feb, 2016, Governing Board Meeting (by Advisor Takeuchi on behalf of Director)