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under the auspices of UNESCO



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ICHARM

International Centre for Water Hazard and Risk Management
under the auspices of UNESCO

Message from Director

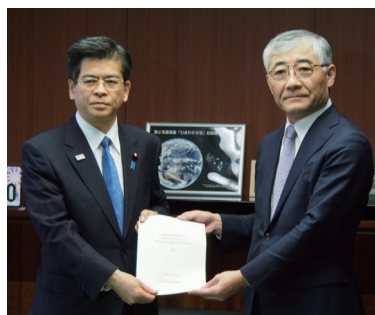
Multi-layered Countermeasures against Widespread Devastating Flood Disasters

The largest water vapor convergence since 1958 was recorded across western Japan in early July 2018, breaking the records of 24-to-72-hour rainfall at many stations in the area and causing devastating disasters including floods due to bank breaches and overflows, debris flows, and urban inundations. We also witnessed new types of disasters induced by multiple causes including the backwater phenomenon at confluence zones and floods involving a huge scale of floodwater and sediment transport simultaneously. Furthermore, eight dams in western Japan exhausted their flood control capacities and had to start emergency water-discharge operations to avert reservoir overflows from the heavy rainfall.

In addition, we later learned that dam discharge warnings were not used effectively to support residents in safe evacuation. As a consequence, 232 people either died or went missing, and prefectures in western Japan suffered significant economic damage. The number of more than 200 victims was the worst case since 1982.

To prevent the recurrence of devastating disasters over a wide area, the Council for Social Infrastructure Development analyzed the characteristics and issues of the July 2018 disasters and submitted a report including the recommended countermeasures based on the key strategies to the Minister of Land, Infrastructure, Transport and Tourism on December 13, 2018. Towards building a community where everyone evacuates proactively, the report recommends that each community develop a cooperative framework to strengthen self-help and mutual support by enriching information of hazards, risks and evacuation and improving communication methods in cooperation with the mass media and the ICT private sector. The report also proposes more resilient infrastructure design, development and operation against complex disasters and hazards which exceed infrastructure capacities and suggests strategies for the implementation of quick disaster responses and recoveries and extra considerations of disaster risks in community development. We need to promote such multi-layered countermeasures as a package to cope with unprecedented disasters.

The vulnerabilities of Japan to water-related disasters are now increasing due to the falling birth rate and the aging population, while unexperienced hazards occur increasingly frequently due to climate change. Moreover, people's values and needs are diversified more than ever. Considering all these, we, scientists and policymakers, need a long-term vision with which we should patiently work on people to transform their actions against disasters and persistently continue to plan and develop infrastructure to reduce disaster risks.



Director Toshio Koike (right) submits a report to the Minister of Land, Infrastructure, Transport and Tourism Keiichi Ishii (left) on December 13, 2018

石井啓一国土交通大臣（左）に答申書を手渡す
小池俊雄センター長（右）（2018年12月13日）

大規模広域豪雨災害に対する多層的な対策

1958年以降で最大の水蒸気収束が2018年7月初旬に西日本を中心に記録されました。その結果、24~72時間の長時間豪雨の記録が各所で更新され、破堤・溢水による浸水、土石流、都市部での内水氾濫等の災害が発生しました。また、本川と支川の合流部におけるバックウォーター現象や、土砂と洪水が同時に氾濫する土砂・洪水氾濫等の複合的な要因による水災害が発生しました。さらに、8ダムにおいて洪水調節容量を使い切り、異常洪水時防災操作に移行せざるを得ない事態となりました。このとき、放流情報等が避難に活用されていない地域があったことも新たな課題となりました。これらの結果、死者行方不明が232名にも及ぶ大災害となり、経済活動等においても甚大な被害が生じました。なお、一つの災害で200名を超える犠牲者が出たのは1982年以來のことでした。

これらの特徴や課題を整理して、対策における基本的な考え方に基づいて速やかに実施すべき事項を取りまとめ、2018年12月13日、社会資本整備審議会より国土交通大臣に答申させて頂きました。答申では、一人ひとりが主体的に避難できる地域社会を目指して、マスメディアや通信の民間事業者等の協力を得て、災害、リスク、避難の情報の内容や発信方法を充実させて、自助、共助を支援するための仕組みづくりに取り組むこととしております。また複合災害や施設能力を超える災害外力に対する社会資本整備の在り方や、復旧・復興を迅速化する取組や災害リスクへの配慮を推進する方策についても提言しています。このように多層的な取り組みを一体感を持って進めていかなければなりません。

気候が変化して経験を超える災害外力が頻繁に発生する一方で、少子高齢化により社会が脆弱化しています。多様化している価値観と需要に配慮しつつ、長期的な展望に基づいて、災害に対する人々の行動の変容を促し、災害リスクを軽減できる社会資本の整備を粘り強く進めていかなければなりません。

January 31, 2019
Toshio Koike
Director of ICHARM



Special Topics

3. Director Toshio Koike received the International Science Cooperation Award 2018 from the Chinese Academy of Science / ICHARM 小池俊雄センター長の中国科学院からの 2018 年国際科学協力賞受賞
4. UNESCO Evaluation Mission for ICHARM's activities / ICHARM の活動に対する UNESCO の評価ミッション
4. ICHARM held the 63rd R&D Seminar / ICHARM 第 63 回 R&D セミナーを開催

International Flood Initiative (IFI)

6. 11th GEOSS Asia-Pacific Symposium / 第 11 回 GEOSS アジア太平洋シンポジウム

Training & Education

7. Educational Program Updates / 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」活動報告
8. Hands-on training on IFAS in JICA short-term training / JICA 短期研修での IFAS ハンズオントレーニング

Research

9. World Bank Brazil project: ICHARM technical training / 世界銀行ブラジルプロジェクト: ICHARM 技術研修
10. - Special contribution / 特別寄稿 -
Ana Paula Martins do Amaral Cunha, Researcher of CEMADEN [Drought monitoring and impacts assessment in Brazil: The CEMADEN experience] / Ana Paula Martins do Amaral Cunha 研究員 (CEMADEN 所属) 「Drought monitoring and impacts assessment in Brazil: The CEMADEN experience」
12. Introduction of ICHARM research projects / 研究紹介
12. Miho Ohara, Senior researcher [Strengthening the Capacity of Businesses in Underground Shopping Malls for Flood Prevention and Evacuation Guidance by Using an Information Sharing Application] / 大原美保 主任研究員「情報配信アプリを活用した地下街等関係事業所の避難確保・浸水防止体制の強化」
13. Islam Md. Khairul, Doctoral program student (D3) and Research assistant [Conducting field survey for developing reliable flood damage curves in the north-eastern part of Bangladesh] / 博士課程 (3 回生)・リサーチアシスタント イスラム ムハマド カイルール氏「Conducting field survey for developing reliable flood damage curves in the north-eastern part of Bangladesh」

Information Networking

14. Typhoon Committee 7th working group on hydrology in Tokyo and 13th integrated workshop in Chiang Mai, Thailand / 台風委員会 第 7 回水文部会 (東京) および第 13 回統合部会 (タイ・チェンマイ)
15. Participation in the Asia Water Forum 2018 organized by Asian Development Bank / アジア開発銀行の主催によるアジア水フォーラム 2018 への参加
16. Participation in Strategic planning meeting - Hydrological systems and water scarcity section / 「戦略計画会議—水文システムと水不足セクション」への参加
16. 26th UNESCO-IHP Regional Steering Committee for Asia and the Pacific / 第 26 回 UNESCO-IHP アジア太平洋地域運営委員会
17. Participation in Strategic Workshop organized by i-WSSM / i-WSSM が主催するワークショップへの参加

Field Survey

18. Field survey in the Solo river basin of Indonesia / インドネシア・ソロ川流域における現地調査

Others

18. Comment from visiting scientist and internship student / 客員研究員とインターン生からのコメント
19. Personnel change announcement / 人事異動のお知らせ
19. Awards / 受賞リスト
20. Business Trips / 海外出張リスト
20. Visitors / 訪問者リスト
20. Publications / 発表論文リスト

Special Topics

Director Toshio Koike received the International Science Cooperation Award 2018 from the Chinese Academy of Science / ICHARM 小池俊雄センター長の中国科学院からの2018年国際科学協力賞受賞

ICHARM Director Toshio Koike was presented with the 2018 Award for International Scientific Cooperation of the Chinese Academy of Sciences (CAS) for his professional and educational achievements. Among many, CAS highly praised him for clarifying the roles of the Tibetan Plateau in the occurrence of heavy rain and drought disasters in Asia, promoting international integrated research on the global water cycle, and leading an international technical cooperation project to improve the accuracy of heavy rain forecasting in China. It also recognized his considerable contributions to human resources development in the hydrometeorological field of China. The award is given to three scientists annually in the field of natural sciences, and Prof. Koike is the fourth honorable winner from Japan after Dr. Sin-ichi Kurokawa, who was awarded in 2011 for his achievements in high energy physics. The other two were Prof. Shih Choon Fong, a former president of the National University of Singapore, and Prof. Nils Christian Stenseth, a Norwegian biologist.

The awarding ceremony took place on January 17, in the presence of CAS President Bai Chunli and over 100 directors of all the concerning institutes. After the introduction of the other two professors, the achievements of Prof. Koike were shared with the audience, including the development of a new generation terrestrial hydrological model and its applications, the promotion of the Coordinated Enhanced Observing Period (CEOP), the contribution to establishing the intergovernmental Group on Earth Observations (GEO), the integrated research project of the climate and hydrological cycle on the Tibetan Plateau, and capacity development for Chinese researchers.

On January 18, Prof. Koike delivered a commemorative lecture titled "Towards better understanding of the atmosphere and land interaction in the Tibetan Plateau" at the Institute of Tibetan Plateau Research (ITP), which recommended him for the award. Prof. Yao Tandong, a former director of ITP and a member of CAS, was the moderator of the gathering, which had a great turnout of about 150 researchers in related fields of science and engineering.

ICHARM 小池センター長においては、これまでのアジア域の豪雨、渇水災害に与えるチベット高原の役割の解明、地球水循環の国際統合研究の推進、中国における豪雨予測精度向上のための国際技術協力事業の実施等における研究、人材育成に関する功績に対して、このたび、中国科学院より2018年国際科学協力賞が授与された。これは自然科学全分野で年間3名に授与されるもので、我が国からは2011年の高エネルギー物理の黒川真一博士以来4人目の栄誉となる。

1月17日に中国科学院で行われた授賞式では、中国科学院院長のChunli Bai教授をはじめ、傘下の100を超える全研究所の所長の参加の下、元国立シンガポール大学学長のShih Choon Fong教授、ノルウェーの生物学者のNils Christian Stenseth教授に続き、小池センター長の陸域水循環の新たなモデル開発とその適用に関する業績、全球を対象とした協調観測プロジェクトの推進と地球観測政府間部会(GEO)設立への貢献、チベット高原での気候と水循環の統合的研究プロジェクトの実施と中国研究者の育成に対する業績が紹介された。

また、18日午後には推薦母体であるチベット高原研究所(ITP)において、ITP関係者150名程度の参加のもと、前所長でアカデミーメンバーのYao Tandong教授の司会により受賞記念講演会が開催され、小池センター長より「Towards better understanding of the atmosphere and land interaction in the Tibetan Plateau」と題する講演が行われた。



Prof. Koike (first from right) after the awarding ceremony at the Chinese Academy of Sciences (Source: Chinese Academy of Sciences)
中国科学院での授賞式 (中国科学院ホームページより)



Prof. Koike (right) with a local scientist during an activity in the Tibetan Plateau (Source: Chinese Academy of Sciences)
チベット高原での活動 (中国科学院ホームページより)

References: Website of Chinese Academy of Sciences

参考：中国科学院ホームページ

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(Written by Tetsuya Ikeda)

UNESCO Evaluation Mission for ICHARM's activities / ICHARM の活動に対する UNESCO の評価ミッション

ICHARM は 2006 年に日本国政府とユネスコとの間で締結された合意書に基づき、ユネスコ・カテゴリー II センターとして設立されました。2013 年に改定されている現行の合意書は 2019 年 7 月までが期限となっており、現在合意書の再度の改定作業中です。改定にあたっては、合意書の改定期限より少なくとも 6 か月前までに、外部有識者及びユネスコ代表者によって、ICHARM の活動に対する評価が行われることとなっています。

このため、11 月 12 日から 14 日までの 3 日間、カリフォルニア大学アーバイン校の気象水文・リモートセンシングセンター長である Soroosh Sorooshian 教授とユネスコ・アジア太平洋地域科学局の Hans Thulstrup 氏の 2 名を委員とする評価ミッションによって、ICHARM の活動に対する評価が行われました。

初日の 11 月 12 日には、小池俊雄センター長より ICHARM の活動について紹介を行い、午後には ICHARM の研究者、修士・博士課程の学生に対するインタビューが行われました。2 日目には国土交通省水管理・国土保全局と文部科学省ユネスコ国内委員会への表敬、及び国土交通省水管理・国土保全局国際室、外務省国際文化協力室、政策研究大学院大学へのインタビューが行われました。

最終日には、土木研究所・西川和廣理事長への表敬訪問が行われ、午後には ICHARM の小池センター長らとの全体討議を行い、一連の評価作業が終了しました。

この評価の結果については、後日、レポートとして取りまとめられ、今年 4 月に予定されているユネスコの執行理事会 (Executive Board) に報告されることとなっています。

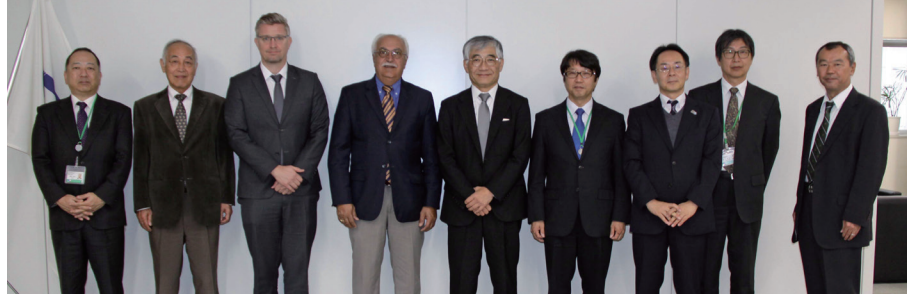


Photo with the evaluation mission members (Dr. Thulstrup, third from left, and Prof. Sorooshian, fourth from left)
評価委員との写真 (左から 3 人目が Thulstrup 氏、4 人目が Sorooshian 教授)

ICHARM is a UNESCO Category 2 Centre, established under the agreement between UNESCO and the government of Japan signed in 2006. The agreement was renewed in 2013 and will expire in July 2019. Though it is currently in the revision process, a formal review on ICHARM's activities by external evaluators and representatives of UNESCO is implemented at least six months prior to the expiration of the agreement, based on the resolution at the UNESCO general conference in 2013.

In compliance with the resolution, the evaluation was conducted for three days from November 12 to 14, 2018, by the evaluation mission team composed of Professor Soroosh Sorooshian, the director of the Center for Hydrometeorology and Remote Sensing, the University of California, Irvine, and Dr. Hans Thulstrup from the UNESCO Regional Science Bureau for Asia and the Pacific.

On the first day, Director Toshio Koike presented ICHARM's activities in the morning, and the evaluation team interviewed ICHARM researchers and master's and doctoral students in the afternoon. On the second day, courtesy visits were made to the Water and Disaster Management Bureau of MLIT* and the Japanese National Commission for UNESCO of MEXT*. Interviews were also conducted respectively with the International Affairs Office of the Water and Disaster Management Bureau of MLIT, the Multilateral Cultural Cooperation Division of MOFA*, and the National Graduate Institute for Policy Studies (GRIPS).

On the last day, the evaluation team paid a courtesy visit to PWRI President Kazuhiro Nishikawa, and had an overall discussion with Director Koike and ICHARM researchers in the afternoon, which wrapped up the series of evaluation tasks.

The results of the evaluation will be summarized in a report at a later date, which will be submitted to the UNESCO Executive Board to be held next April.

- * MLIT: Ministry of Land, Infrastructure, Transport and Tourism
- * MEXT: Ministry of Education, Culture, Sports, Science and Technology
- * MOFA: Ministry of Foreign Affairs



Courtesy visit to PWRI president Nishikawa
西川理事長への表敬訪問

(Written by Tetsuya Ikeda)

ICHARM held the 63rd R&D Seminar / ICHARM 第 63 回 R&D セミナーを開催

ICHARM では、水災害分野に関する国内外の専門家を招へいし、最新の知識や知見を習得し、研鑽する機会として「ICHARM R&D Seminar (ICHARM 研究開発セミナー)」を開催しています。このほど、下記要領

ICHARM holds R&D Seminars to provide self-development opportunities for researchers to keep up with the latest knowledge and information by inviting domestic and international experts in the field of hydrology and water-related disasters.

The 63rd seminar was held at the ICHARM Auditorium on November 15, 2018. The speaker was Prof. Soroosh Sorooshian, the director of the Center for Hydromete-

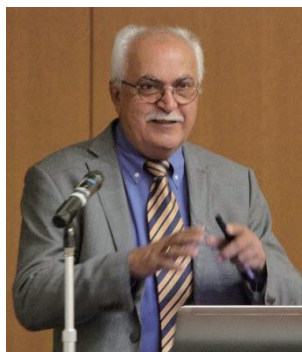
orology and Remote Sensing, University of California, Irvine. He delivered a presentation entitled "Climate Variability and The Global Hydrologic Cycle: Efforts in Monitoring, Modeling and challenges in forecast Changes."

In his presentation, Prof. Sorooshian covered a wide range of topics from the basic viewpoint that is important to understand issues concerning climate, hydrology, and water resources to advanced projects such as ensemble forecasting using climate models and predicting future climate scenarios. He also introduced the PER-SIANN system designed to deliver real-time precipitation information by using remote sensing technology. The presentation was very informative and insightful, drawing considerable attention from the audience.

Answering questions about future climate research after the presentation, Prof. Sorooshian stressed the importance of developing and selecting approaches and models while always aware of their limitations.

To wrap up the 63rd seminar, ICHARM Director Koike pointed out Prof. Sorooshian's remarkable research achievements, mentioning a good cooperative relationship the professor has built with his lab members and co-researchers.

ICHARM will continue to hold R&D seminars on many occasions.



Prof. Soroosh Sorooshian, the director of the Center for Hydrometeorology and Remote Sensing, University of California, Irvine

Soroosh Sorooshian 名誉教授
米カルフォルニア大学アーバイン校
気象水文リモートセンシングセンター長

で第 63 回セミナーを開催しました。

- ・日時：2018 年 11 月 15 日 (木)
10:00-11:30
- ・講師：Soroosh Sorooshian 名誉教授、Director, Center for Hydrometeorology and Remote Sensing (CHRS), University of California, Irvine (米カルフォルニア大学アーバイン校 気象水文リモートセンシングセンター長)
- ・講演名：「Climate Variability and The Global Hydrologic Cycle: Efforts in Monitoring, Modeling and challenges in forecast Changes」(気候変動と全球水文循環：モニタリング・モデリングの取り組みと予測変化における挑戦)

講演内容は気候、水文、水資源に対する基礎的かつ重要な考えから気候モデルのアンサンブル予測や将来シナリオなどの先進的な取り組みまで幅広く網羅しており、メッセージ性の強い興味深い講演でした。また、リモートセンシング技術を駆使して開発され、リアルタイムの降雨情報を配信可能な「PERSIANN」システムも紹介され、聴講者から高い関心が寄せられました。

講演後、会場からは、気候予測研究の今後の取り組むべき方向性などについて質問があがり、適用限界を理解した上で手法やモデルを構築・選択することが重要であることが述べられました。最後に小池センター長より、Sorooshian 名誉教授が研究室のメンバーや共同研究者と良好な協力体制を築いていることも、著しい研究成果をあげている一因であることが特筆すべき点として加えられました。

ICHARM では今後も様々な機会を捉え、セミナーを開催していく予定です。



Group photo with audience / 聴講者とともに集合写真

(Written by Daisuke Kuribayashi)

International Flood Initiative (IFI)

The International Flood Initiative (IFI) is a worldwide framework to promote collaboration in flood management among international organizations such as UNESCO, the World Meteorological Organization (WMO), the United Nations University (UNU) and the United Nations International Strategy for Disaster Reduction (UNISDR). ICHARM has been its secretariat since the establishment of IFI.

In October 2016, the Jakarta Statement towards an interdisciplinary and transdisciplinary partnership to consolidate flood risk reduction and sustainable development, was adopted by the member organizations of IFI. As part of this effort, the Philippines, Sri Lanka, Pakistan and Myanmar have already decided to establish a Platform on Water Resilience and Disasters involving various government agencies, and ICHARM has been supporting their decision as facilitator.

This article reports the 11th GEOSS Asia-Pacific Symposium in Kyoto, Japan.

国際洪水イニシアティブ (International Flood Initiative: IFI) はユネスコ (UNESCO)、世界気象機関 (WMO)、国連大学 (UNU)、国連国際防災戦略 (UNISDR) などの国際機関が世界の洪水管理推進のために協力する枠組みで、ICHARM は、IFI の事務局を担当しています。

2016 年 10 月に承認された「洪水リスク軽減と持続可能な開発を強固にするための学際的な協力に向けた宣言文 (ジャカルタ宣言)」を受け、各国および関係機関と協働しながら、統合洪水マネジメントに貢献する活動を進めています。特に、フィリピン・スリランカ・パキスタン・ミャンマーにおいては、各国の関係機関による「水のレジリエンスと災害に関するプラットフォーム」の構築に向けた取り組みが始まり、ICHARM はファシリテーターとしてその活動の促進を図ってきました。

本号では、京都で行われた第 11 回 GEOSS アジア太平洋シンポジウムについて報告します。

11th GEOSS Asia-Pacific Symposium / 第11回 GEOSS アジア太平洋シンポジウム

2018年10月24日から26日に京都（京都テルサ）において「全球地球観測システム（GEOSS：Global Earth Observation System of Systems）アジア太平洋シンポジウム」が開催されました。

第11回目である本シンポジウムでは「持続可能な開発のための2030アジェンダ（SDGs）・パリ協定・仙台防災枠組2015-2030に対してGEOSSが貢献するためのアジア太平洋地域間協力の強化」と題してアジア水循環イニシアティブ（AWCI：Asian Water Cycle Initiative）のセッションが10月24日と25日に開催され、国際洪水イニシアティブ（IFI：International Flood Initiative）実施国間の地域間協力の推進について議論されました。AWCIセッションでは、スリランカよりPalitha Range Bandara かんがい水資源管理担当大臣をお招きするとともに、スリランカ、フィリピン、ミャンマー、インドネシアなどIFIを推進・設立している各国の代表者らが参加しました。各国における水のレジリエンスと災害に関するプラットフォームの活動の進捗報告とともに、地域間の協力体制について議論することで、SDGsやパリ協定、仙台防災枠組に対する明確な貢献目標を定めることができました。

また10月25日の午後には水をテーマとするAWCIと農業をテーマとするAsiaRiCEの合同部会も開催され、分野間の連携や協力についても話し合われました。シンポジウムの最終日である10月26日には、SDGs、パリ協定、仙台防災枠組を実現するための貢献度や目標に関する議論の成果が各セッションから提出され、それらをまとめた京都ステートメントが採択されました。AWCIセッションのアジェンダおよび京都ステートメントは右記に公開されています。

The 11th Global Earth Observation System of Systems (GEOSS) Asia-Pacific Symposium was held on October 24-26, 2018, in Kyoto, Japan. The symposium was subtitled "Strengthening Regional Cooperation through AOGEOSS for the SDGs, Paris Agreement and Sendai Framework."

During the symposium, the Asian Water Cycle Initiative (AWCI) session was organized for two days on the 24th and 25th, attended by experts and representatives from the implementing countries of the International Flood Initiative (IFI): Sri Lanka, the Philippines, Myanmar, and Indonesia, including Hon. State Minister Palitha Range Bandara of the Ministry of Irrigation and Water Resources & Disaster Management of Sri Lanka. The participants discussed issues on the promotion of regional cooperation among the IFI implementing countries. The representatives reported the progress of the Platforms on Water Resilience and Disasters in their countries and discussed a regional cooperative framework among the participating countries. The session also set out specific goals for AWCI's contribution to the SDGs, Paris Agreement, and Sendai Framework.

On the afternoon of October 25, AWCI had a joint session on water and agriculture with AsiaRiCE, a group focusing on agricultural issues, and discussed the promotion of interdisciplinary cooperation and collaboration. The symposium ended on October 26 by adopting the Kyoto Statement, which summarizes the contributions of all the sessions held during the symposium.

- Agenda and presentation materials at the AWCI session / AWCI セッションのアジェンダと発表資料

https://geoss-ap-symp11.org/program_tg1.html

- Kyoto Statement 2018 / 京都ステートメント

https://geoss-ap-symp11.org/_public/Kyoto_Statement_2018_Final.pdf



Participants in the AWCI session on October 24, 2018
アジア水循環イニシアティブ（AWCI）セッション参加者（2018年10月24日）

(Written by Mamoru Miyamoto)

Training & Education

Educational Program Updates / 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」活動報告

The 2018-2019 M.Sc. course began with the opening ceremony held on October 1. Lectures started a week after the opening ceremony, including Hydrology by Prof. Toshio Koike, Basic Concepts of Integrated Flood Risk Management by Prof. Kuniyoshi Takeuchi, Hydraulics by Prof. Shinji Egashira, and Flood Hydraulics and River Channel Design by Prof. Shoji Fukuoka. At about the same time also started Practice on GIS and Remote Sensing Technique. In November, Mechanics of Sediment Transportation and Channel Changes by Prof. Egashira and Practice on Flood Forecasting and Inundation Analysis were also added to the list of the ongoing lectures. Since this master's degree program is a one-year course, the class schedule can be very tough particularly in the first half of the year; the students sometimes have three lectures a day. However, they are so motivated that they have been vigorously working on the coursework.



Scenes from the lectures
講義風景

On October 12, the students attended a lecture at Tokyo and visited the Honjo Life Safety Learning Center of the Tokyo Fire Department with the students studying at the International Institute of Seismology and Earthquake Engineering (IISEE). The joint visit was planned to promote the exchange between the students of IISEE and ICHARM, as both master's courses are offered as part of the Disaster Management Policy Program (DMP), which is established through the collaboration of the two institutes, JICA and the National Graduate Institute for Policy Studies (GRIPS).

On October 24-26, the students went on the first study tour to the Kinu River basin in the northern Kanto region to see progress in recovery from the damage caused by the Kanto Tohoku heavy rain in September 2015. They visited restoration project sites along the Kinu River and the Kawaji and Ikari dams located in the upper Kinu River. On November 9, they visited the Geospatial Information Authority of Japan (GSI) and learned the roles of GSI in case of disasters. On November 16-30, they attended the two-week intensive lectures at GRIPS.

The second study tour took place on December 5-7. The students visited the Tsurumi River multi-purpose retarding basin and the Kawawa retarding basin in the Tsurumi River basin in Kanagawa Prefecture and the Metropolitan Area Outer Un-

2018年度修士コース開講式が10月1日に行なわれました。第2週目からは、本格的な講義が開始され、小池センター長による Hydrology, 竹内前センター長による Basic Concepts of Integrated Flood Risk Management, 江頭研究・研修指導監による Hydraulics 及び中央大学研究開発機構福岡教授による Flood Hydraulics and River Channel Design 等が始まりました。ほぼ同時に、実習科目 Practice on GIS and Remote Sensing Technique、さらに11月からは江頭研究・研修指導監による Mechanics of Sediment Transportation and Channel Changes 及び実習科目 Practice on Flood Forecasting and Inundation Analysis が始まりました。この修士コースは1年間で実施されるため、コース前半は1日3講義のこともあり、学生にとって非常に多忙なスケジュールとなりますが、本年の学生達も意欲的に聴講しています。

10月12日は、東京において、同じ政策研究大学院大学 (GRIPS) 防災政策プログラムの国立研究開発法人 建築研究所 国際地震工学センターの学生と合同講義を実施、あわせて東京消防庁本所防災館を訪問して同じプログラムの学生同士の交流を深めました。

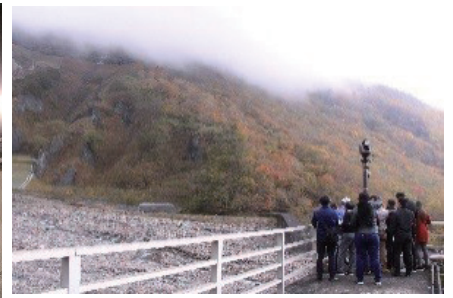
10月24日から26日は、第1回目の研修旅行として、鬼怒川流域等を訪問しました。この旅行では、2015年9月の関東・東北豪雨災害によって被災した鬼怒川の復旧工事現場、鬼怒川上流の川治ダム、五十里ダムなどを見学しました。11月9日は、国土地理院を訪問し、災害時における活動などについての講義を受けました。11月16日から11月30日は、東京に滞在し、GRIPSにおいて実施された集中講義を受講しました。

12月5日から7日は、第2回目の研修旅行として、都市型の洪水対策を学ぶ為に神奈川県にある鶴見川多目的遊水地及び川和遊水地並びに埼玉県にある首都圏外郭放水路を見学しました。

なお、ICHARM では修士コースの活動を出来るだけ多くの方に伝えるべく、Facebookに研修活動報告のページを開設しています (<https://www.facebook.com/icharmtrainingcourse>)。是非、ご覧下さい。

derground Discharge Channel in Saitama Prefecture to learn about flood control measures specifically designed to protect urban areas.

The major activities of this M.Sc. program are also posted on the Facebook page 'ICHARM training course' at <https://www.facebook.com/icharmtrainingcourse>.



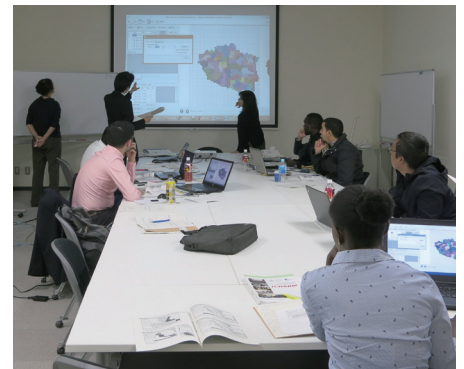
Site Visit to the Kawaji dam and the Ashio sabo dam
川治ダム、足尾砂防ダムへ現地見学

(Written by Tomoki Nakamura)

Hands-on training on IFAS in JICA short-term training / JICA 短期研修での IFAS ハンズオントレーニング

JICA の 2018 年度課題別研修「インフラ施設（河川・道路・港湾）における災害対策（B）コース」が 11 月 6 日から 12 月 18 日まで実施され、11 月 21 日に ICHARM にて望月主任研究員と Shrestha 主任研究員が「洪水予測モデルの概要と演習について」に関する講義・演習を行いました。研修の参加者はコンゴ民主共和国、ジョージア、イラン、メキシコ、モロッコ、ネパール、タジキスタンからの 8 名の実務者で、研修において洪水予測の概要に関する講義と IFAS（統合洪水解析システム）モデルを用いたハンズオントレーニングを行いました。実際の流域を事例としたトレーニングでは、各自のコンピュータで実際に IFAS モデルを操作し、河道モデルの作成や流量の算出、結果の表示まで行うことができました。全ての参加者が積極的に受講し、参加者から ICHARM での洪水予測に関する取組内容について質問がなされました。また、自国の取組について紹介するとともに、今後は研修内容を活用し、自国の技術のさらなる向上に繋げていきたいとの発言がありました。

Senior Researchers Takafumi Mochizuki and Badri Shrestha gave a lecture and hands-on training about a flood forecasting model at ICHARM on November 21, 2018, as part of JICA training, "JFY2018 Disaster Management on Infrastructure (River, Road and Port) (B)," held from November 6 to December 18. Training participants consisted of eight practitioners from the Democratic Republic of the Congo, Georgia, Iran, Mexico, Morocco, Nepal, and Tajikistan. They received a lecture on flood forecasting and hands-on training using the Integrated Flood Analysis System (IFAS) model. They practiced operating the IFAS model on their personal computers for a sample basin, creating river models, calculating river discharge, and displaying results. All participants engaged actively in the training, asking many questions including ICHARM's efforts in flood forecasting. They also made presentations on flood management projects in their countries. In the end, they said that they would like to utilize the contents of the training in the future for further technological improvement in their countries.



JICA training at ICHARM
ICHARM で実施した JICA 研修の様子

(Written by Takafumi Mochizuki)

Research

World Bank Brazil project: ICHARM technical training / 世界銀行ブラジルプロジェクト：ICARM 技術研修

In the World Bank Brazil project, ICHARM have been developing an agricultural drought monitoring and prediction system for northeastern Brazil and Ceará State. Particularly, we aim to develop a system with a high spatial resolution of 1 km for Ceará State in order to provide quality information on drought conditions to farmers of different scales. To improve the reliability of drought information as much as possible, land-cover data with a high spatial resolution and in-situ precipitation data collected at multiple stations are required. Also important is to create a framework in which researchers familiar with local conditions first learn the basic theory of the system and then develop the system accordingly.

Since the Ceará State Meteorology and Water Resources Foundation (FUNCEME) has such data and conducts meteorological drought monitoring and prediction, its two researchers, Mr. José Marcelo Rodrigues Pereira and Dr. Valdenor Nilo de Carvalho Júnior, were appointed by the World Bank to stay at ICHARM for a month in October to receive training on the Coupled Land and Vegetation Data Assimilation System (CLVDAS). CLVDAS is a core model of the monitoring and prediction system under development and composed of Ecohydro-SiB, which is a combined model of the dynamic vegetation model and HydroSiB, and a microwave radiative transfer model.

Because of the complexity of the core model, the training covered extensive contents. Director Toshio Koike lectured the basic theory and modeling of hydrology and microwave remote sensing, Senior Researcher Mohamed Rasmy explained about the physical theory, algorithm and source code of HydroSiB, and Research Specialist Hiroyuki Tsutsui provided a practical training of CLVDAS implemented in the Data Integration and Analysis System (DIAS) developed by the University of Tokyo. Furthermore, the Brazilian researchers received a comprehensive lecture on CLVDAS from Dr. Yohei Sawada, a CLVDAS developer of the Meteorological Research Institute. In addition, Dr. Ikoma of the University of Tokyo lectured the DIAS, and Research Specialist Katsunori Tamakawa instructed them to create gridded precipitation data covering the period from 1961 to the present for Ceará State using FUNCEME's in-situ rainfall text data collected at multiple stations. Land-use data with a high spatial resolution were also prepared. The preparation of these datasets was a significant achievement by FUNCEME's researchers in the technical training, and this is a great step forward in the system development for Ceará State.



ICARM technical training
ICARM が実施した技術研修の様子

ICARM は、世界銀行ブラジルプロジェクトにおいてブラジル北東域とセアラ州を対象とした農業学的干ばつをリアルタイムで監視・予測するシステムを開発しています。特に、セアラ州を対象としたシステムでは、小作農家を含む個々の農家へ干ばつ評価情報を提供するために1kmの高分解能を目標としています。干ばつ評価情報の信頼性を可能な限り向上させるためには、高空間分解能の土地被覆データや多地点の地上観測降雨データが必要になります。さらに現地の条件を熟知した研究者がシステムの基礎理論を理解した上で、本システムの開発を行う体制づくりが重要になります。

Ceará State Meteorology and Water Resources Foundation (FUNCEME) は、これらのデータを所有し、気象学的干ばつ監視・予測を行っている研究機関であることから、FUNCEME の2名の研究者 (Mr. José Marcelo Rodrigues Pereira・Dr. Valdenor Nilo de Carvalho Júnior) が世界銀行より推薦され、ICARM に1か月間(10月)滞在し、研修を受けました。

システムの核となる CLVDAS (Coupled Land and Vegetation Data Assimilation System) は、植生動態モデルと HydroSiB の結合モデルである陸面モデル Ecohydro-SiB とマイクロ波放射伝達モデルから成る同化システムです。ゆえに本研修では、水文学・マイクロ波リモートセンシングの基礎理論からモデリングまでの広範囲な講義 (小池センター長)、HydroSiB の物理学的理論・アルゴリズム・ソースコードに関する講義 (Mohamed Rasmy 主任研究員)、CLVDAS オペレーション実習 (筒井専門研究員) が実施されました。また CLVDAS の開発者である澤田洋平研究官 (気象研究所) による CLVDAS に関する包括的な講義が実施されました。さらに東京大学の生駒栄司准教授より DIAS についての講義がなされ、また玉川専門研究員の指導の下、FUNCEME の多地点降雨データよりセアラ州降水量地上観測グリッドデータ (1961年 - 現在) が作成され、同時に高空間分解能の土地利用データが整備されました。これらデータ基盤の整備は、本技術研修における2名の研究者の大きな成果であり、これはセアラ州を対象としたシステム開発における大きな前進です。

(Written by Hiroyuki Tsutsui)

—特別寄稿—

ICHARM は世界各地の専門機関と連携しつつ、各種活動を推進しています。2017年11月には仙台の世界防災フォーラムでテクニカル・セッションを主催し、そこにブラジル・CEMADEN から Dr. Marengo Jose Antonio が参加しました。このたび、この CEMADEN の取り組みに関する記事を投稿いただきました。

- Special contribution -

ICHARM promotes various activities in collaboration with professional organizations around the world. In November 2017, ICHARM organized a technical session at the World Bosai Forum in Sendai, in which Dr. Marengo Jose Antonio participated from Centro Nacional de Monitoramento e Alertas de Desastres Naturais (CEMADEN) of Brazil. As a research institute tackling challenges in the same field, CEMADEN kindly contributed an article on their activities to this volume of ICHARM Newsletter.



Drought monitoring and impacts assessment in Brazil: The CEMADEN experience

Ana Paula M.A. Cunha, José A. Marengo, Luz A. Cuartas, Javier Tomasella, Marcelo Zeri, Regina C. S. Alvalá, Karinne R. Deusdará-Leal, Osvaldo L. L. Moraes



First author: **Ana Paula Martins do Amaral Cunha**, Researcher of CEMADEN

Brazil has been affected by intense drought events during the recent decades: Northeast Brazil (NEB) in 2010- 2018; Southeastern Brazil in 2014-15; Amazonia in 2005, 2010 and 2016, among the most important. The drought that has been affecting NEB for the past 6 years^[1,2,3,4] has led to discussions about demands for improvements in drought policy and resilience to drought, - as well as management at the federal and state levels in the region of the drought - as a socio-economic environmental problem. Although drought is a recurrent phenomenon in NEB, it is perceived that risk and vulnerability are still high, particularly in its semiarid rural areas. There is a need for actions in which the scientific and the decision makers communities can work together on drought issues, focusing on reducing vulnerability.

Drought impacts are crucial for many social and economic activities in Brazil and on demand from the President's Cabinet regularly requested information about its impacts to support and provide guidance for emergency mitigation measures. In Brazil the National Center for Monitoring and Early Warning of Natural Disasters (CEMADEN), a R&D Institution linked to the Minister of Science and Technology, routinely deliver this information at federal level. For instance, since more than 70% of energy supply come from hydroelectric power plants we weekly present scenarios of the reservoir levels of the main basins where the plants are located. We also regularly deliver information about the reservoirs used to water supply. Since the 2014/2015 drought in the Brazil southeast we monitor the biggest reservoirs used in the metropolitan regions of São Paulo and Rio de Janeiro. Drought also impacts South and Midwest of Brazil, which are the main agricultural producing regions, and we develop models to forecast its impacts in the crops production.

Specifically, regarding the impact of agricultural droughts in municipalities in the NEB, CEMADEN provides, on a municipality base, remote-sensing-based drought indices besides other hydrometeorological data that allows the identification of the most critical areas affected by the drought. CEMADEN performs the evaluation of the phenological cycle of the main agricultural crops of the region (maize and beans) using a remote sensing-based index with a spatial resolution of 250 meters. Such initiative aims to meet the requirements established in the Presidential Decree No 8,472 for the Agricultural Yield Guarantee Programme (Garantia Safra Program, GS) of the Ministry of Agricultural Development (MDA). The GS Program aims to guarantee a minimum allowance to subsistence agriculture farmers when affected by drought or rainfall in excess.

To perform the drought monitoring and impact assessment, CEMADEN has developed and used drought indicators that combine surface observation-based drought index (Precipitation anomalies, Standardized precipitation index – SPI, Potential evapotranspiration and soil moisture) and remote sensing-based index (Vegetation Health Index -VHI, 4 km and Vegetation Supply Water Index - VSWI, 250 m). Recently, CEMADEN also developed the Integrated Drought Index (IIS) which combine the SPI and VSWI anomalies. The SPI is calculated considering the scales of 3, 6 and 12 months, while VSWI anomalies are calculated on the monthly scale. The ISS is calculated on the monthly scale and computed at the municipal level in the entire country (Figure 1).

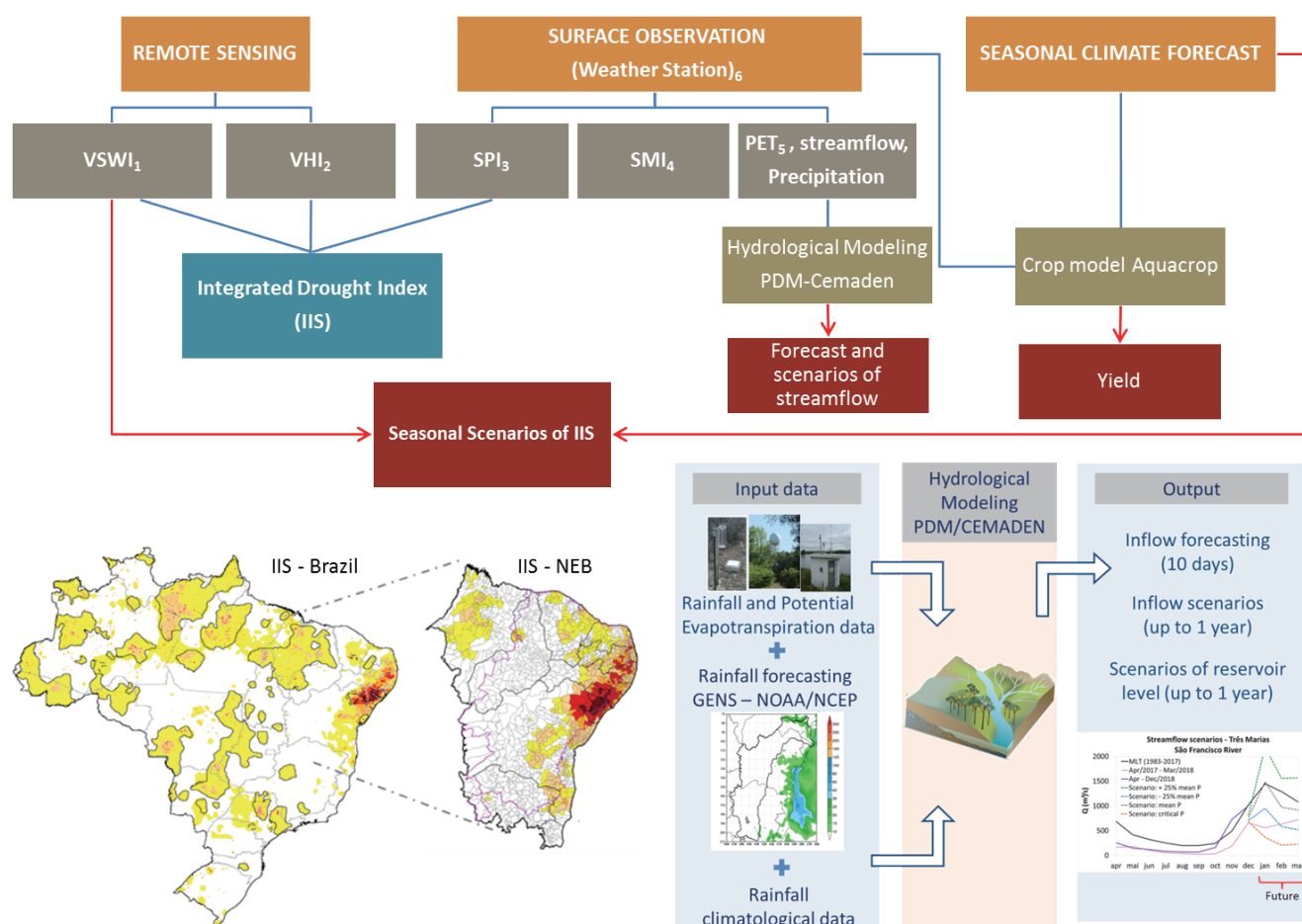
In support of drought analysis, a network of soil moisture sensors was established from 2014 to 2015 by CEMADEN, in order to monitor soil water in NEB. Soil moisture is currently being monitored at 595 locations, in depths ranging from 10 to 40 cm^[5]. This information is used to support the development of tools and numerical models to characterize and quantify the risks associated with drought conditions. Regarding crop yield scenarios, the model AquaCrop^[6] has been used for crop yield forecasting in the Brazilian semiarid using a combination of meteorological observations and seasonal climate forecasts as input data^[7]. Future developments aim at coupling sub-seasonal forecasts of weather variables to the model and generate scenarios of yields for shorter time scales.

Concluding Remarks

Beyond that, CEMADEN implemented, in 2014, a monitoring network for the upstream basins of the Cantareira reservoirs, the main water supply system of the Metropolitan Region of São Paulo State, Brazil. Due to the continuity of rainfall below the historical average in the Southeast region, CEMADEN has been developing and updating a monitoring and prediction system (Figure 1) for the Cantareira system, and also for Três Marias, Emborcação, Furnas Mascarenhas^[8], all reservoirs located in southeastern Brazilian and,

more recently, for Serra da Mesa reservoir, a hydroelectric power generation system located in Central Brazil. For the reservoirs located in the semiarid, CEMADEN has been developing similar monitoring system and simulation of the water balance. The information is available in bulletins since January 2015 for Cantareira Water Supply System, September 2015 for the NEB and February 2017 for Três Marias hydropower reservoir (<http://www.cemaden.gov.br>).

The multidisciplinary scientific and technical team of CEMADEN generates knowledge, results and products for drought monitoring that are relevant in the decision making processes concerning mitigation actions at the federal government level. From the drought indicators, the magnitude or intensity, onset, duration, and impacted area can be estimated. These drought characteristics are relevant for the impact assessment, as well as to prediction of drought impacts, which plays an important role in drought risk management. The identification of areas and municipalities along with the drought event characterization, together with its impacts assessment is of utmost importance in order to guide local actions by the Federal Government. Then, the most vulnerable populations may receive support in due time and to ensure that public expenses are prioritized where more resources are needed. Additionally, the identification of the areas most affected is crucial to support managers in decision making in terms of adaptation measures.



¹Vegetation Supply Water Index - Calculated by CEMADEN using NDVI and LST (MODIS NASA). Since 2002 and spatial resolution of 250 m.

²Vegetation Health Index - Source: STAR/NOAA/NESDIS

³Standardized Precipitation Index - Since 1961 and 1998 with spatial resolution of 25 km and 5 km, respectively.

⁴Soil Moisture Index

⁵Potential Evapotranspiration

⁶Source: CEMADEN, CPTEC/INPE, ANA, INMET

Figure 1. Flow chart of CEMADEN Monitoring and Forecasting drought Impact

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Introduction of ICHARM research projects / 研究紹介

ICHARM は、その使命を果たすため、世界及び地域での災害の傾向及び経験と災害対応に関する地域のニーズ、重要課題、開発段階等を踏まえつつ、自然、社会及び文化といった地域の多様性を考慮する原則というローカリズムを念頭に、研究、能力育成及び情報ネットワーク構築の3本柱を有機的に連携させて、現地実践活動を実施しています。そのうち、研究としては

- (1) 水災害データの収集、保存、共有、統計化
 - (2) 水災害リスクのアセスメント
 - (3) 水災害リスクの変化のモニタリングと予測
 - (4) 水災害リスク軽減の政策事例の提示、評価と適用支援
 - (5) 防災・減災の実践力の向上支援
- の5つの柱のもと、革新的な研究活動を行っています。

本号では、大原美保 主任研究員の行っている研究「情報配信アプリを活用した地下街等関係事業所の避難確保・浸水防止体制の強化」と博士課程(3回生)・リサーチアシスタントのイスラム ムハマド カイルール氏の行っている研究「Conducting field survey for developing reliable flood damage curves in the north-eastern part of Bangladesh」を紹介しします。

ICHARM sets three principal areas of activity: research, capacity building, and information network. It plans and implements projects in these areas in order to fulfill its mission, always keeping in mind "localism", a principle with which we respect local diversity of natural, social and cultural conditions, being sensitive to local needs, priorities, development stage, etc., within the context of global and regional experiences and trends of disasters.

At present, ICHARM conducts innovative research in the following five major areas:

- (1) **Data collection, storage, sharing, and statistics on water related disasters**
- (2) **Risk assessment on water related disasters**
- (3) **Monitoring and prediction of changes in water related disaster risk**
- (4) **Proposal, evaluation and application of policy ideas for water related disaster risk reduction**
- (5) **Support in constructing the applicability of water-related disaster management**

This issue introduces two studies as listed below:

Miho Ohara, Senior researcher

Strengthening the Capacity of Businesses in Underground Shopping Malls for Flood Prevention and Evacuation Guidance by Using an Information Sharing Application

Islam Md. Khairul, Doctoral program student (D3) and Research assistant

Conducting field survey for developing reliable flood damage curves in the north-eastern part of Bangladesh



Strengthening the Capacity of Businesses in Underground Shopping Malls for Flood Prevention and Evacuation Guidance by Using an Information Sharing Application

情報配信アプリを活用した地下街等関係事業所の避難確保・浸水防止体制の強化

Miho Ohara, Senior researcher
大原美保 主任研究員

近年の豪雨の増加に伴い、地下街の安全性向上へのニーズが高まっている。ICHARMの大原美保主任研究員は、降雨量・水位・潮位・浸水等の観測情報を地下街等関係事業所に配信するアプリケーションを活用して地下街等の避難確保・浸水防止体制の強化を図る手法を提案するとともに、横浜駅西口地区への適用を行っている。本研究は、戦略的イノベーション創造プログラム(SIP)の一環として実施している。

提案手法ではまず平常時(ステップ1)に、観測情報のレベルに応じて対応すべき行動を記述したタイムライン(行動計画)を作成しておく。災害発生直前のステップ2では、観測情報を配信するアプリにより、あらかじめ設定した閾値を超えた場合に、各事業所に対してメール等による一斉通報を行う。災害発生後のステップ3では、タイムラインに沿って、各事業所が必要な一斉対応を行う。更に平常時には、図上訓練型のワークショップにより、上記のステップに習熟しておく。

横浜駅西口地区の地下街は帷子川沿いに立地しており、浸水の危険性が高い。2018年は、横浜駅西口共同防火防災管理協議会の協力のもと、提案手法を本地区に適用す

Along with recent increases in torrential rainfall events, the need for ensuring people's safety in underground shopping malls is becoming higher and higher. In response to this urgent need, Senior Researcher Miho Ohara has proposed a method for strengthening the capacity of businesses in underground shopping malls for flood prevention and evacuation guidance by utilizing an application that sends businesses observed hazard information such as rainfall, water levels, tide levels, and inundation levels. The proposed method was applied to the West Exit area of Yokohama Station in Japan in a research project supported by the Cross-ministerial Strategic Innovation Promotion Program (SIP).

The proposed method consists of three steps. At step 1, businesses in and near underground shopping malls prepare timeline plans in normal times, describing necessary responses according to observed hazard levels. At step 2, an information sharing application emails alerts to inform businesses of observed hazard levels when the sensors detect the rainfall, water level, tide level, or inundation exceeding the pre-determined thresholds. At step 3, businesses take necessary emergency responses according to the timeline plans prepared at step 1. In addition, tabletop exercises are held in normal times to enhance the understanding of the above steps.

In 2018, a proposed method was applied to the West Exit area of Yokohama Station, an area having a high disaster risk in case of flooding from the Katabira River. The project was carried out with support from the local community council for fire and disaster management of underground shopping malls. Trial operation of the information sharing application started from August 2018. When Typhoon No. 24

hit the area on October 1, 2018, alerts were emailed to the local businesses to inform them of rainfall and inundation levels detected by the sensors at different designated places. On August 1, before the trial operation started, a table-top training workshop was held for the businesses to have a clear image of emergency responses they are supposed to initiate at receiving alerts.



Workshop in August, 2018
2018年8月に行われたワークショップ

Ohara is planning to discuss the effectiveness of the method at the next workshop scheduled in January 2019.

る活動を行った。2018年8月から情報配信アプリの試験運用を開始し、2018年10月1日の台風24号襲来時には、アプリにより、降雨量や浸水検知を知らせるメールの一斉送信が行われた。試験運用開始前の8月1日には、写真の通り、情報受信時の各事業所での対応をイメージしてもらうための図上訓練型ワークショップも開催した。2019年1月30日開催予定の次のワークショップでは、提案手法の有効性に関する議論を行う。



Conducting field survey for developing reliable flood damage curves in the north-eastern part of Bangladesh

Islam Md. Khairul, Doctoral program student (D3) and Research assistant
 ইসলাম মুহাম্মদ কায়রুল 博士課程 (3 回生)・リサーチアシスタント
 Supervisors: Abdul Wahid Mohamed RASMY, Toshio Koike and Kuniyoshi Takeuchi
 指導教官: モハメッド ラスミー アブドゥル ワヒド、小池俊雄、竹内邦良

1. Introduction

To develop reliable flood damage curves for two damage categories e.g., agricultural damage for Boro rice and property damage for households, a questionnaire survey was conducted in two sub-districts of the north-eastern part of Bangladesh (Figure 1) from November 25th to December 6th, 2018. Probability sampling technique was used to calculate the minimum sample size for each damage category. Other than collecting flood damage information from the target farmers and households through interview, various observed damage data from different government sectors were also obtained during the period. The outcome of this field investigation is to be used for flood risk assessment in the said area of Bangladesh as a part of Ph.D. research.

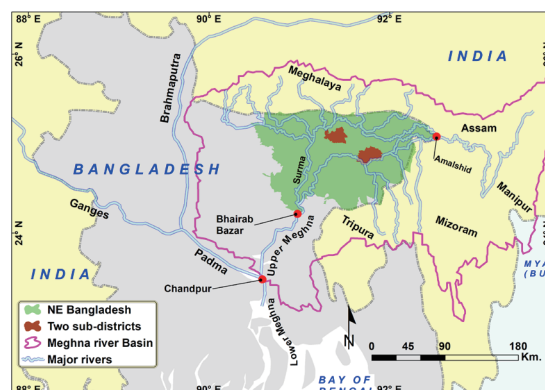


Figure 1: Topographical features of the surveyed area

2. Survey on Boro rice damage

Boro rice is the major crop of north-eastern Bangladesh planted usually in mid-December to early January and harvested by late April. The damage of Boro rice mainly takes place 20-30 days before its harvesting due to flash floods that are likely to occur almost every year by heavy rainfall in the upper Meghna basin in India. Therefore, considering the flowering through maturity stage of Boro rice, each interviewee was asked to reply on the amount of rice damage in terms of varying flood depths and duration. A number of group and individual discussions and consultations were made with the farmers and local experts during the whole survey period.



Figure 2: Group discussion with local experts and farmers

3. Survey on household damage

During field investigations, three types of houses were observed according to their building materials. They are shown in the Figure 3(a-c) and called as (a) Kaccha, (b) Semi-packa, and (c) Packa houses. The house type that was mostly observed in the sample area is Kaccha. It is noteworthy to mention that no house was seen in the area with more than one-story building structure. Each target household was interviewed to gather damage information on house buildings and assets according to varying inundation depths. Several other questions such as the value and plinth level of houses, the depth of inundation the houses experienced during different flood events, were also asked.

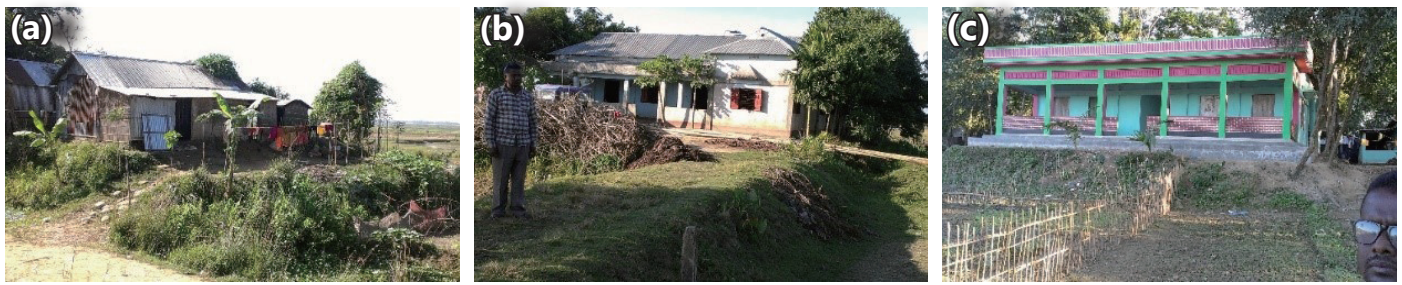


Figure 3: Different types of houses according to building materials. **(a)** Kaccha: made of mud/soil, straws, bamboo sticks and corrugated iron sheet; **(b)** Semi-Packa: made of mud/cement, bricks, and corrugated iron sheet; **(c)** Packa: made of bricks, cement, brick/stone chips, and steel rods (Reinforced Cement Concrete building)

Information Networking

Typhoon Committee 7th working group on hydrology in Tokyo and 13th integrated workshop in Chiang Mai, Thailand / 台風委員会 第7回水文部会（東京）および第13回統合部会（タイ・チェンマイ）

2018年10月9日から12日にかけて東京において、国土交通省、ICHARM、（一社）国際建設技術協会（IDI）の共催により台風委員会（TC）第7回水文部会（WGH）が開催されました。2012年から毎年連続して水文部会が開催されるようになって以来、初めての日本での開催です。会議には米国、中国、韓国、タイ、ベトナム、ラオス、フィリピン、マレーシアの8か国と台風委員会事務局（TCS）から合計18名の参加がありました。日本からは国土交通省の塚原水管理・国土保全局長や松木国際室長他3名が、またICHARMから小池センター長、徳永上席研究員（水文部会議長）、池田上席研究員他5名、IDIから日下部部長他3名が参加しました。会議では各国からの報告や現在実施中の5つの年間実行計画（AOP）についての議論のほか、小池センター長、松木室長等からテクニカルプレゼンテーションが行われました。11日には現地視察として、利根川と江戸川の分流点である千葉県野田市にある関宿城博物館で利根川の河川開発と東遷の歴史等に触れました。

また、11月5日から9日にかけてタイ・チェンマイにおいて台風委員会第13回統合部会が開催されました。初日の全体会合では9名の基調講演が行われ、2日目の部会横断プロジェクトでは、今までの各部会ごとのプロジェクトをより効果的に進めるために部会横断での取り組みについて各代表者から発表が行われました。2日目の午後と3日目には各部会が行われ、4日目に各部会からの報告と閉会式を行いました。ICHARMからは徳永上席研究員、池田上席研究員と富澤主任研究員が参加しました。池田上席研究員は、来年度から部会横断的に実施する新たな年間実行計画「水のレジリエンスと災害に関するプラットフォーム」（AOP7）の設立について、また、富澤主任研究員は「フラッシュフラッ

The seventh Annual Meeting of the Working Group on Hydrology (WGH) of the Typhoon Committee (TC) was held in Tokyo, on October 9-12, 2018. The meeting was co-organized by the Ministry of Land, Infrastructure Transport and Tourism (MLIT), ICHARM and Infrastructure Development Institute-Japan. It was the first time for Japan to host the WGH meeting after 2012 when WGH meeting started to be held annually. Total 18 participants from 8 countries (the United States, China, Korea, Thailand, Vietnam, Laos, the Philippines and Malaysia) and a staff member of TC Secretariat gathered. ICHARM sent Director Toshio Koike, Chief Researcher Yoshio Tokunaga (Chair of the working group), Tetsuya Ikeda and Senior Researcher Yosuke Tomizawa to join Director General Hirokazu Tsukahara and Director Tadahiro Matsuki of MLIT. During the meeting, each country presented national report and participants discussed five "Annual Operation Plans (AOP)," and Prof. Koike and Director Matsuki conducted technical presentations. On October 11, participants visited Sekiyado-jo museum located on the divergence point of Tone river and Edo river, and learned about the history of river improvement of Tone river.

Also, TC 13th integrated workshop was held in Chiang Mai, Thailand on November 5-9, 2018. At the plenary session on the first day, nine experts delivered keynote speeches. On the second day, there was a cross sectoral projects session aimed at getting more effective progress from each working group projects. Each working group meeting was held in the second day afternoon and the third day, which was followed by the general meeting on the fourth day where each working group reported the outcome of the individual meeting. ICHARM sent Mr. Tokunaga, Dr. Ikeda and Mr. Tomizawa to the workshop. Dr. Ikeda proposed a new AOP on "Platform on Water Resilience and Disasters under the International Flood Initiative (IFI)" (AOP7), and Mr. Tomizawa reported the progress of AOP1 "Flash Flood Risk Information for Local Resilience." The proposal for new AOPs is scheduled to be adopted



Participants of the TC 13th integrated workshop in Chiang Mai
チェンマイで開催された台風委員会第13回統合部会の参加者

at the TC annual session in February 2019 in Guangzhou, China.

ICHARM will continue striving to share research outcomes with other experts and organizations through such international frameworks as the Typhoon Committee.

(Written by Yosuke Tomizawa)

ドガイドライン」(AOP1) プロジェクトの途中経過を報告しました。新規 AOP は 2019 年 2 月中国・広州で開催される台風委員会第 51 回総会において採択が予定されています。

ICHARM では今後もこのような国際枠組みの場を通じて研究成果の公表に努めていく所存です。

Participation in the Asia Water Forum 2018 organized by Asian Development Bank / アジア開発銀行の主催によるアジア水フォーラム 2018 への参加

The Asian Development Bank (ADB) organized the Asia Water Forum 2018 in Manila, the Philippines, on October 2-5, which focused on "Information, Innovation, and Technology" and attracted more than 800 participants from the Asia-Pacific region including government officials, water and development professionals, and representatives from the private sector, academia, civil society, and the media.

The Forum was constituted of a series of panel discussions, technical sessions, and workshops, which targeted river basin management, flood control, water pollution, service delivery such as irrigation and water supply and sanitation. The event is also complemented by an exhibition of 48 international firms showcasing the latest water-sector technologies and innovations.

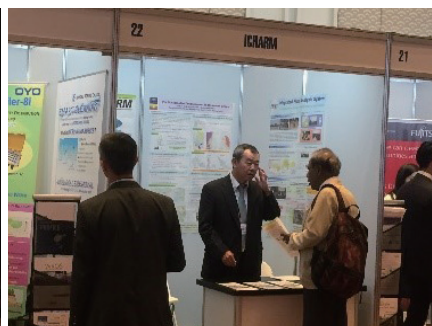
From ICHARM, Chief Researcher Tetsuya Ikeda participated in this Forum, and made a presentation titled "ICHARM's contribution on water-related disaster risk reduction in Asia and the world" in the parallel session of "Enhancing Climate Resilience" on October 4. In this presentation, the recent activities of ICHARM and the progress of the International Flood Initiative (IFI) were introduced and attracted the high attention of the audience.

At the exhibition hall, ICHARM displayed posters introducing an ADB project on flood management for Myanmar, training programs such as master and Ph.D. courses, and flood runoff analysis models developed by ICHARM such as the Integrated Flood Analysis System and the Rainfall-Runoff-Inundation model. As many countries in Asia and the Pacific frequently suffer from flood disasters, many participants visited the ICHARM booth with high interest and collected information about its activities and expertise.

As ICHARM has contributed to various projects around the world to disseminate technologies for flood disaster risk reduction including ADB projects in Myanmar and Vietnam, this Forum was an excellent opportunity to publicize its activities.



Presentation at a parallel session
パラレルセッションでの発表



Poster presentation at the exhibition hall
展示会場でのポスター紹介

2018年10月2～5日、アジア開発銀行(ADB)が主催するアジア水フォーラム2018がフィリピン・マニラで開催されました。今回のフォーラムでは「情報、イノベーション、技術」に焦点が当てられ、政府機関職員、水・開発分野の専門家、民間企業・学術機関・市民団体・メディアの代表者ら、アジア太平洋地域から800名を超える参加者がありました。

フォーラムでは、河川管理や洪水対策、水質汚染、水供給と衛生などの水に関するサービス、及びかんがいといったテーマに関し、パネルディスカッション、テクニカルセッションやワークショップが開催されました。また、48の国際機関による、水分野での最新技術やイノベーションに関する展示が行われました。

ICHARMからは池田鉄哉上席研究員が参加し、10月4日に開かれた「気候への強靱性向上」のセッションにおいて、「アジア及び世界での水関連災害リスク軽減に向けたICHARMの貢献」というタイトルで発表を行いました。発表では、ICHARMによる最近の活動や国際洪水イニシアティブ(IFI)の進展状況が紹介され、聴衆から高い関心が寄せられました。

展示会場でICHARMは、ミャンマーで実施した洪水管理に関するADBプロジェクト、博士コースや修士コース等の研修プログラム、IFASやRRIといったICHARMが開発した洪水流出解析モデルを紹介するポスターを展示しました。アジア太平洋地域の多くは洪水被害の頻発に悩まされており、多数の参加者がICHARMの活動に関心を寄せ、ICHARMのブースで情報を集めていました。

ICHARMは洪水災害リスク軽減に資する技術の普及の観点から、ミャンマーやベトナムでのADBプロジェクト等、世界各地でのプロジェクトに貢献してきており、今回のフォーラムはそうした活動を紹介する良い機会となりました。

References:

<https://www.adb.org/news/fifth-asia-water-forum-discusses-innovation-and-technology-address-asias-water-challenges>

(Written by Tetsuya Ikeda)

Participation in Strategic planning meeting - Hydrological systems and water scarcity section / 「戦略計画会議—水文システムと水不足セクション」への参加

2018年10月22日、23日に、パリ・UNESCO本部において、「戦略計画会議—水文システムと水不足セクションについて」が開催され、ICHARMを代表して今村特別研究監が参加しました。同会議の目的は、第8期国際水文学計画（IHP-VIII、2014年～2021年）における活動のレビューを行うとともに、残りの計画期間における課題、第9期IHP計画（IHP-IX）についての議論を行い、今後の活動方針を定めることでした。

IHP-VIIIでは6つのテーマが定められていますが、今回の会議は「テーマ1：水関連災害と水文変化」及び「テーマ3：水不足及び水質への取組」のうちの水不足への取組を対象として開かれました。同会議にはIHPの活動を進めるユネスコのカテゴリー2センターとチェアの代表の十数名が参加しました。事務局からの説明の後、各代表からセンター及びチェアの活動紹介があり、ICHARMの活動紹介を行いました。その後、これまでの活動のレビュー、今後3年間の活動方針などについての議論が行われました。

同会議への参加成果としては、ICHARMの活動について紹介を行うとともに、「今後3年間の活動方針」の議論において、国際洪水イニシアティブ（IFI: International Flood Initiative）や関連する全球地球観測システム（GEOSS: Global Earth Observation System of Systems）を紹介し、最終成果案に反映されるなど、ICHARMの活動が非常に活発であるとの高い評価を受けました。

また、今村特別研究監は23日午後に関われた「アンデス山脈氷河と水の地図帳」などの発行記念ワークショップ及び24日の「気候変動に対して脆弱な地域の水資源管理向上のための気候サービス強化」プロジェクトの発足会合にも参加しました。

なお、会議期間中にユネスコ日本代表部山田大使を表敬訪問するとともに、萩原参事官、ユネスコ自然科学局水科学部アマニ課長、ミシュラ・プログラムスペシャリスト、世界水アセスメント計画事務局コンカグル・プログラムスペシャリストらとの会談・会合を行い、情報収集やICHARMとユネスコの協力などについて意見交換を行いました。

"Strategic planning meeting - Hydrological systems and water scarcity section" was held on October 22-23, 2018, at the headquarters of UNESCO in Paris, France. Prof. Yoshiyuki Imamura, the director for Special Research, participated as a representative of ICHARM. The purposes of the meeting were to review the activities of the 8th International Hydrology Program (IHP-VIII, 2014-2021), to discuss the issues to be addressed during the remaining planning period and the 9th IHP (IHP-IX), and to develop future action policies.

Among the six themes defined in IHP-VIII, this meeting was held for "Theme 1: Water-related disasters and hydrological changes" and the part of water scarcity in "Theme 3: Addressing water scarcity and quality." More than ten representatives of UNESCO Category 2 Centres and UNESCO Chairs promoting IHP activities participated in the meeting. After the explanation from the secretariat, the representatives from each delegation introduced the activities of the centers and the chairs, including those of ICHARM presented by Prof. Imamura. After that, the issues on the past activities and activities policy for the next three years during IHP-VIII were also discussed.

The results of the meeting are as follows:

- In addition to presenting the activities of ICHARM, International Flood Initiative (IFI) and the Global Earth Observation System of Systems (GEOSS) were introduced in the discussion of "Activity policy for the next three years," and reflected in the final outcome plan.
- ICHARM's activities were highly appreciated.

Prof. Imamura also participated in the workshop launching high-level publications such as "The Andean Glacier and Water Atlas" on the afternoon of the 23rd and the kick-off meeting on the 24th regarding the project "Enhancing climate services for improved water resources management in vulnerable regions to climate change" (ClimWaR).

During the mission, Prof. Imamura had additional meetings with Ambassador H.E. Takio Yamada and Counselor Sadahiro Hagiwara of the Japanese delegation to UNESCO, Section Chief Dr. Abou Amani and Program Specialist Dr. Anil Mishra of the Water Sciences Division of UNESCO, and Program Specialist Dr. Engin Koncagul of the World Water Assessment Program Secretariat, and exchanged views on cooperation between ICHARM and UNESCO.



Strategic planning meeting
会議の様子

(Written by Yoshiyuki Imamura)

26th UNESCO-IHP Regional Steering Committee for Asia and the Pacific / 第26回 UNESCO-IHP アジア太平洋地域運営委員会

2018年11月4日に中国・上海において第26回ユネスコ国際水文学計画（UNESCO-IHP）アジア太平洋地域運営委員会（RSC）が開催され、ICHARMからは宮本守研究員が

The 26th UNESCO-IHP Regional Steering Committee for Asia and the Pacific was held on November 4, 2018, in Shanghai, China. Researcher Mamoru Miyamoto participated in the meeting along with other researchers and officers from countries in Asia and the Pacific regions.

In this meeting, UNESCO-IHP presented its overall plan for the region, and 18 member countries, including Afghanistan, Australia, China, Fiji, Indonesia, Iran, Japan, Korea, Laos, Malaysia, Myanmar, Mongolia, Nepal, New Zealand, the Philippines, Thailand, Democratic Republic of Timor-Leste, and Vietnam, explained their recent activities on water-related issues. As one of the UNESCO Category II Centres, each of which also explained their efforts, ICHARM reported its ongoing training activities such as the master's and doctoral courses and those related to the Platforms on Water Resilience and Disasters, which are being implemented in the Philippines, Sri Lanka, Myanmar, Pakistan, and Indonesia under the IFI framework. Some participants praised ICHARM for these achievements, saying that it is one of the most active UNESCO Category II Centres.

The meeting agreed that Prof. Yasuto Tachikawa of Kyoto University would continue to be the RSC secretary. The 27th committee is scheduled to meet in Myanmar.



26th UNESCO-IHP Regional Steering Committee for Asia and the Pacific on November 4, 2018
UNESCO-IHP アジア太平洋地域運営委員会 (2018年11月4日)

(Written by Mamoru Miyamoto)

参加しました。

運営委員会では、UNESCO-IHPに係わるアジア・太平洋地域各国の研究者等が参加し、UNESCO-IHPの全体計画や各国の活動状況、ユネスコセンターからの活動報告等が行われました。第26回となる本会合では、アフガニスタン、オーストラリア、中国、フィジー、インドネシア、イラン、日本、韓国、ラオス、マレーシア、ミャンマー、モンゴル、ネパール、ニュージーランド、フィリピン、タイ、東ティモール、ベトナムから各国の活動報告が行われ、UNESCOカテゴリーIIセンターからも活動報告が行われました。ICHARMからは、マスターコースやドクターコースのプログラムなど、研修に係わる最近の活動と、IFIの枠組みによりフィリピン、スリランカ、ミャンマー、パキスタン、インドネシアで活動している水のレジリエンスと災害に関するプラットフォームの取り組みを報告しました。参加者からは、最も活発な活動を展開しているUNESCOカテゴリーIIセンターの1つとされるなど、高い評価を得ることができました。

なお、RSCの事務局長は引き続き京都大学の立川康人教授が務めることが参加者に承認され、次回の第27回UNESCO-IHPアジア太平洋地域運営委員会は、ミャンマーで開催予定であることとされました。

Participation in Strategic Workshop organized by i-WSSM / i-WSSMが主催するワークショップへの参加

The International Center for Water Security and Sustainable Management (i-WSSM) organized a strategic workshop in Seoul, Korea, on December 19, 2018. Like ICHARM, i-WSSM is a UNESCO Category II Centre, which was founded in May 2017.

The event was attended by representatives from government agencies and experts of Korea and those from international organizations such as UNESCO and the International Water Resources Association (IWRA). The participants discussed various issues and made suggestions regarding future activities to be addressed by i-WSSM. Deputy Director Hisaya Sawano also participated in the workshop and delivered a presentation on the activities of ICHARM.



Participants of i-WSSM Strategic Workshop
i-WSSM 主催 Strategic Workshop の参加者

(Written by Hisaya Sawano)

ICHARMと同じユネスコカテゴリーIIセンターとして、2017年5月に韓国に設立されたi-WSSM (International Centre for Water Security and Sustainable Management) が、2018年12月19日にソウルで Strategic Workshop を開催し、ICHARMから澤野グループ長が参加、ICHARMの活動内容についてプレゼンテーションを行った。

このワークショップには、韓国の関係政府機関や学識者、ユネスコ、IWRA (International Water Resources Association) 等が参加しており、今後のi-WSSMの活動についての提案等が行われた。

Field Survey

Field survey in the Solo river basin of Indonesia / インドネシア・ソロ川流域における現地調査

2018年12月3日から8日の日程で富澤主任研究員、Rasmy主任研究員、Shrestha主任研究員がインドネシアを訪問し、6・7日の2日に渡ってソロ川流域における現地調査を行いました。ソロ川は流路延長約600km、流域面積約16,100km²のジャワ島最大の河川です。6日はスラカルタ市(旧ソロ市)にあるソロ川河川流域事務所(BBWS Solo)で流域の雨量観測データ等について打合せを行ったほか、ソロ川唯一の大規模ダムであるWonogiriダムの状況を確認しました。7日はソロ川に沿って下流に下り主要水位観測所のあるチェブ、ボジョネゴロ地点を調査した他、最大の支川であるマディウン川の合流点では地元住民から過去の洪水の際の痕跡について聞き取りを行いました。

今回の調査の結果に基づいて、流出モデルをより精緻に構築し、統合的気候モデル高度化研究プログラム等の研究に反映していきます。

A team of researchers from ICHARM visited Indonesia from December 3 through 8, 2018, and conducted a field survey in the Solo River for 6 and 7 December. The Solo river is the largest river in Java island, and has about 600km length and 16,100km² catchment area. On 6 December, the team member had a meeting with the Solo river basin organization (BBWS Solo) on rainfall observation data in the basin at Surakarta city (ex-Solo city). After the meeting the team visited the only large dam in the Solo river, Wonogiri dam and check the situation of irrigation. On 7 December, the team went down through the river and check the major water level observation stations such as Cepu and Bojonegoro and had interview with residents about flood mark around confluence of the largest tributary Madiun river.

Based on the this field survey, simulation models will be improved and contribute the Integrated Research Program for Advancing Climate Models progress.



Hearing from local residents about flood damages
地元住民から過去の洪水被害のヒアリング

(Written by Yosuke Tomizawa)

Others

Comment from visiting scientist and internship student / 客員研究員とインターン生からのコメント

ICHARMではこの冬、マンスフィールド・フェローの客員研究員、Ian Morrison氏と横浜国立大学からのインターン生、Mohammad Razaul Karim Reza氏を受け入れました。

彼らからの、ICHARMでの研究活動を振り返ったコメントを紹介いたします。

ICHARM accepted a visiting scientist Mr. Ian Morrison of Mansfield Fellow and an internship student Mr. Mohammad Razaul Karim Reza from Yokohama National University this winter.

They contributed a short message as below while looking back at his studying at ICHARM.

Mr. Ian Morrison (from Hawaii in U.S.A.)

US National Weather Service, NOAA, Dept of Commerce

Stay period: October 9 - 26, 2018

As a Mansfield Fellow and US NOAA Meteorologist I spent three weeks with ICHARM. The main goal for this visit was to learn how ICHARM is researching, studying and training personnel toward disaster risk reduction.

The US National Weather Service (NWS) has been evolving from a binary forecast agency to an agency that provides decision support services. In the face of increasing natural disasters, both NWS and Japan Meteorological Agency (JMA) are focusing on education & preparation, evolving communication, and improving the science. ICHARM is working diligently on many of the same goals and is a key player in disaster risk management. The ICHARM staff provided me one-on-one meetings with their top researchers in the fields of rainfall, climate change, river flood prediction, social science, and flood management. Both Japan and the US are very interested in further research and the social science behind evacuation actions.

Dr. Hitoshi Umino planned my stay at ICHARM and scheduled all the events and appointments with the staff, and scheduled fields trips. I sincerely appreciate his efforts. Professor Toshio Koike was more than generous in sharing his



Mr. Morrison

knowledge of hydrology, government policy, and inviting me to a Typhoon Committee Meeting and Kyoto Symposium. "Thank you!" to the researchers at ICHARM that took valuable time from their work to talk with me and answer questions. And a big MAHALO to the ICHARM professionals that do all the hard work. I sincerely appreciate your efforts!

Aloha, a hui hou!

Mr. Mohammad Razaul

Karim Reza (from Bangladesh)

Yokohama National University (YNU) / 横浜国立大学

Internship period: December 7 - 27, 2018

At first, I would like to reveal gratefulness to my academic supervisor Professor Dr. Yoshiyuki NAKAMURA (Yokohama National University (NYU)) for arranging this opportunity of internship program in ICHARM. Then, I would like to special thanks to Infrastructure Management Program (IMP) Director and all staff officer of IMP in YNU for allowing me to conduct the internship. During the internship period, I learned lots of things such as Data Integration and Analysis System (DIAS), GCM model selection, rainfall bias correction, interpolation and extrapolation by R-studio software, the uncertainty of model, climate change issue etc. So I would like to receive the opportunity to express gratitude to my supervisor Professor Dr. Toshio KOIKE, director of ICHARM. I would also like to thanks my co-supervisors Dr. Katsunori TAMAKAWA and Dr. Maksym GUSYEV for their kindly teach during this internship. In spite of their busy schedule, they spent a lot of time for me. I would like to thank Dr. Hitoshi UMINO, Ms. Yukie OKAWA who gave me many help and encouragement in my work. All Doctoral, master's student and members of ICHARM are cooperative and everyone helped me to adjust in Tsukuba.



Mr. Reza (center) with supervisor, Director Toshio Koike (left) and co-supervisor, Research Specialist Katsunori Tamakawa (right)

Finally, I would like to grateful to ICHARM for giving me this opportunity of the internship, which will be an impressed and superior memory in my life. The institute is a nice position to get to know many researchers and their research with a warm and friendly environment. I expect that ICHARM will continue their success in training students and water-related problem research and wish the professional achievement of ICHARM members.

Personnel change announcement / 人事異動のお知らせ

New ICHARM Member

A new member has joined ICHARM.
He would like to say a brief hello to the readers around the world.



Dr. Robin Kumar Biswas (from Bangladesh)
Research Specialist / 専門研究員

I am very happy to join ICHARM as Research Specialist in Water Related Hazard Team.

I am from Bangladesh that faces lots of challenges to manage sediment related issues such as riverbank erosion and channel changes. Therefore, my research interests include understanding of the behavior of the large river by means of numerical simulations and satellite based observations.

I would like to make my best efforts to utilize this opportunity. Thank you all.

Awards / 受賞リスト

* October - December 2018

- Mr. Ahmad Ali Gul (Research Assistant / Ph.D. student) was presented with the Excellent Presentation Award for his presentation at Japan Society of Civil Engineering (JSCE) 2018 Annual Meeting

Award-winning presentation:

Gul Ahmad Ali, Atsuhiko YOROZUYA, Hiroshi KOSEKI, Shinji EGASHIRA, Shoji OKADA, STUDY OF BEDFORM AND BOIL BASED ON OBSERVATIONS IN BRAHMAPUTRA RIVER, Japan Society of Civil Engineering (JSCE) 2018 Annual Meeting, August 29-31, 2018 in Sapporo, Japan



Business Trips / 海外出張リスト

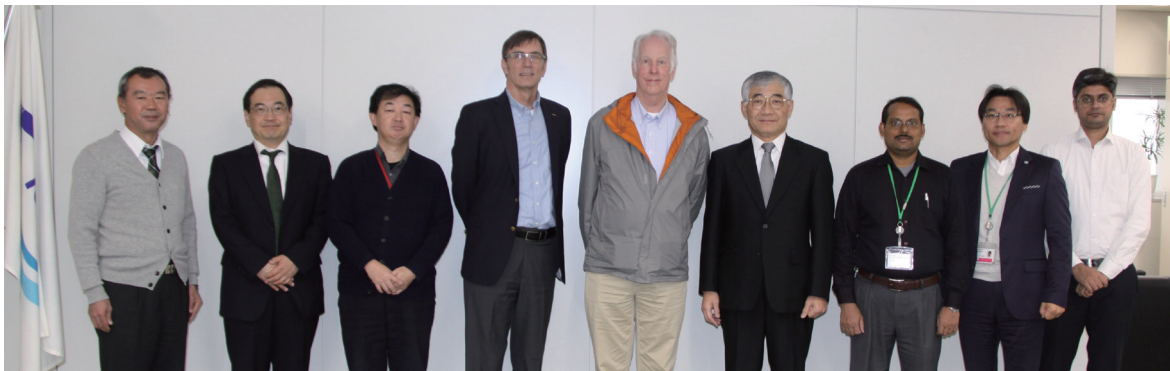
* October - December 2018

- October 1-5, The Philippines, Tetsuya Ikeda, Asia Water Forum (AWF) 2018
- October 2-5, Bangkok in Thailand, Mamoru Miyamoto, SATREPS meeting in Thailand
- October 12-14, Jeju in Korea, Abdul Wahid Mohamed RASMY, The 2018 International Conference on Environmental and Water Resources Engineering (EWRE 2018)
- October 14-19, Kuala Lumpur in Singapore, Yoshiyuki Imamura, For presentation of a paper and to participate in the conference, "the Asian Conference on Remote Sensing (ACRS)"
- October 14-18, China, Toshio Koike and Tetsuya Ikeda, The 20th Scientific Committee Meeting of IRDR
- October 16-20, Naypyidaw in Myanmar, Katsunori Tamakawa, to participate in Improvement of Delivery of Weather, Climate and Hydrological Services in Myanmar: Annual Development Partner Workshop 2018
- October 21-26, Paris in France, Yoshiyuki Imamura, to attend the conferences conducted by UNESCO such as "Strategy Planning Meeting", "High-level Publication Launch" and "Clim WaR Launch" during the event, Strategic Planning Week held at UNESCO HQ Paris
- November 3-5, Shanghai in China, Mamoru Miyamoto, 26th IHP Regional Steering Committee Meeting for Asia and the Pacific (IHP RSC-AP)
- November 3-10, in Thailand, Yoshio Tokunaga, Tetsuya Ikeda and Yosuke Tomizawa, to participate in the 13th Typhoon Committee Integrated Workshop
- November 4-5, Beijing in China, Shinji Egashira, to participate in "5th International Debris Flow Workshop" for making a key note speech
- November 5-8, Taipei in Taiwan, Shinji Egashira and Daisuke Harada, to participate in "the 9th International Conference on Scour and Erosion"
- December 3-8, Jakarta, Bandung, Solo and Surabaya in Indonesia, Yosuke Tomizawa, Badri Bhakta Shrestha and Mohamed Rasy Abdul Wahid, Meeting with Indonesia Ministry of Public Works and Housing and field survey
- December 2-8, Manila and Davao in the Philippines, Mamoru Miyamoto, to participate in "Science Policy Forum – SETI Capacity for the Implementation of SDGs in Asia and the Pacific" and meeting with PAGASA and DOST Davao
- December 10-14, Paris in France, Naoko Nagumo, to participate in the Global Policy Forum on Preservation of Documentary Heritage for Disaster Risk Reduction and Management in UNESCO, Paris
- December 10-14, Washington, D.C. in U.S.A., Yoshihiro Shibuo, to participate in "2018 AGU Fall Meeting"
- December 16-21, Bangkok in Thailand and Ambon in Indonesia, Yoshiyuki Imamura and Yoshio Tokunaga, to promote ICHARM activity of training and research in Thailand and field survey in Ambon, Indonesia
- December 17-19, Bangkok in Thailand, Yosuke Tomizawa, Meeting on Typhoon committee's annual operation plan "Risk management and guidance on regional resilience" at Royal Irrigation Department
- December 17-21, Bangkok in Thailand, Mamoru Miyamoto, to participate in the Joint Coordinating Committee (SATREPS) meeting in Thailand
- December 19-20, Seoul in South Korea, Hisaya Sawano, to attend UNESCO i-WSSM Strategic Workshop Plan
- December 19-22, Jakarta in Indonesia, Toshio Koike, Hiroyuki Ito, Takafumi Mochizuki and Atsuhiko Yorozuya, Joining UNESCO Pakistan project workshop "Year-3 Partners International Technical Workshop"

Visitors / 訪問者リスト

* October - December 2018

- Visited by delegate of the University of Texas at Austin, December 12, 2018
Purpose: Meeting on estimating the run-off and flood discharge by using the hydrological model
- Dr. Gordon Wells (Program Manager, Center for Space Research, The University of Texas at Austin)
- Dr. Kenneth Wisian (Executive Director, Disaster Research Program, The University of Texas at Austin)



Publications / 発表論文リスト

* October - December 2018

1. Journal, etc / 学術雑誌 (論文誌、ジャーナル)

- 栗林大輔、大原美保、岩崎貴志、徳永良雄、平常時から緊急時までのシームレスな利用を考慮した自治体向け災害情報共有システムの提案、地域安全学会論文誌、Vol.33、pp. 247-257、2018年11月
- 筒井浩行、澤田洋平、小池俊雄、ブラジル北東域における2005年歴史的湯水の植生動態-陸面結合データ同化によるモニタリング、水工学論文集、Vol.63、pp. 1417-1422、2018年11月
- 玉川勝徳、長谷川聡、Maksym GUSYEV, Bhawneshwar SAH, 牛山朋来、伊藤弘之、小池俊雄、ベトナムにおける気候変動による降雨変化予測の不確定性とその気候学的理解、水工学論文集、Vol.63、pp. 197-1102、2018年11月
- 菊森佳幹、池内幸司、江頭進治、伊藤弘之、中山間地河川における合理式モデルを用いた洪水予警報手法の開発、水工学論文集、Vol.63、pp. 1345-1350、2018年11月
- 中村要介、小池俊雄、阿部紫織、中村和幸、佐山敬洋、粒子フィルタを適用したRRIモデルによる河川水位予測技術の開発、水工学論文集、Vol.63、pp. 1381-1386、2018年11月
- Gul Ahmad Ali, Atsuhiko YOROZUYA, Hiroshi KOSEKI, Shinji EGASHIRA, Shoji OKADA, ANALYSIS OF BEDFORM AND BOIL BASED ON OBSERVATIONS IN BRAHMAPUTRA RIVER, 水工学論文集, Vol.63, pp. 925-930, November, 2018
- Vystavna Y, Diadin D, Rossi P.M., Gusyev M., Hejzlar J, Mehdizadeh R., and F. Huneau (2018). Quantification of water and sewage leakages from urban infrastructure into a shallow aquifer in East Ukraine, Environ Earth Sci 77: 748. <https://doi.org/10.1007/s12665-018-7936-y>
- Badri Bhakta Shrestha, Hisya Sawano, Miho Ohara, Yusuyuke Yamazaki, Yoshio Tokunaga, Methodology for agricultural flood damage assessment, Flood Risk Management, December, 2018
- Miho OHARA, Naoko NAGUMO, Badri Bhakta SHRESTHA, Hisaya SAWANO, Evidence-based contingency planning to enhance local resilience to flood disasters, flood risk management, December, 2018

2. Oral Presentation (Including invited lecture) / 口頭発表 (招待講演含む)

- Yoshito KIKUMORI, Shinji EGASHIRA, Hiroyuki ITO, Yosuke NAKAMURA, Daisuke HARADA, RESEARCH ON A FLOOD FORECASTING SYSTEM IN MOUNTAINOUS RIVERS, Global Conference on the International Network of Disaster Study in Iwate, Iwate University, Iwate Prefecture Citizens' Cultural Exchange Center "Aiina" July 17-19, 2018
- 中村要介, 牛山朋来, 阿部紫織, 平成29年7月九州北部豪雨を対象とした72時間先洪水予測, 2018年度研究発表会要旨集, pp.34~35, 水文・水資源学会, 2018年8月
- 菊森佳幹, 市川温, CommonMPラッピングマニュアルの刊行, 土木学会全国大会, 土木学会, 北海道大学, 2018年8月29~31日
- Tetsuya Ikeda, ICHARM's contribution on water-related disaster risk reduction in Asia and the world, Asia Water Forum 2018, Asia Development Bank, Manila, Philippine, October 2-5, 2018
- 大原美保, 澤野久弥, 馬場美智子, 中村仁, 建築規制を伴う浸水警戒区域指定の前後における住民意識の変化, 第37回日本自然災害学会学術講演会, 日本自然災害学会, pp.193-194, 仙台市中小企業活性化センター, 2018年10月6~7日
- Badri Bhakta Shrestha, Experiences and Practices on Flood Prediction, Prevention and Mitigation in Various Asian Countries, Fourth International Workshop on Effective Engineering Education, Kisarazu Kosen, Chiba, October 10-11, 2018
- Mohamed Rasmy, Tomoki Ushiyama, Toshio Koike, Masaki Yasukawa, Masaru Kitsuregawa, A Platform on Water Resilience and Disaster: Towards Integrating Multi-Platform Data for Enhancing Water Related Disaster Early Warning and Management in Sri Lanka, International Association of Applied Science and Engineering (IAASE), Jeju Island, South Korea, October 12-14, 2018
- Islam M. Khairul, Nikolaos Mastrantonas, Mohamed Rasmy, Kuniyoshi Takeuchi, Combined use of satellite estimates and rain gauge observations for water resource management in an inaccessible transboundary river basin- the case of the Meghna river basin, International Association of Applied Science and Engineering (IAASE), Jeju Island, South Korea, October 12-14, 2018
- Yoshiyuki Imamura, Study on country-based flood risk index using earth observation data, 39th Asian Conference on Remote Sensing (ACRS), Asian Association on Remote Sensing (AARS), Kuala Lumpur, Malaysia, October 15-19, 2018
- Katsunori Tamakawa, Activities for "Platform on Water Resilience and Disaster" under the frame work of International Flood Initiative (IFI) using Data Integration and Analysis System (DIAS), Improvement of Delivery of Weather, Climate and Hydrological Services in Myanmar: Annual Development Partner Workshop 2018, Department of Meteorology and Hydrology (DMH) of Myanmar, Nay Pyi Taw, Myanmar, October 17-19, 2018
- Gusyev M.A. (2018). Understanding water circulation with tritium and stable isotopes: a case study of water transit times and storage in Hokkaido watersheds. Tokyo Institute of Technology, Tokyo, October 22, Japan
- Katsunori Tamakawa, Climate Change Impact Assessment: Online demonstration of DIAS tool for the analysis of Coupled Model Intercomparison Project Phase 5 (CMIP5), The 11th GEOSS Asia-Pacific Symposium, Group on Earth Observations, Kyoto, Japan, October 24-26, 2018
- Mohamed Rasmy, Real-Time Flood Forecasting: Online demonstration of DIAS System For Sri Lanka for the analysis of Coupled Model Intercomparison Project Phase 5 (CMIP5), The 11th GEOSS Asia-Pacific Symposium, Group on Earth Observations, Kyoto, Japan, October 24-26, 2018
- Mohamed Rasmy, ICHARM ACTIVITIES FOR A PLATFORM ON WATER RESILIENCE AND DISASTERS IN SRI LANKA for the analysis of Coupled Model Intercomparison Project Phase 5 (CMIP5), The 11th GEOSS Asia-Pacific Symposium, Group on Earth Observations, Kyoto, Japan, October 24-26, 2018
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- 牛山朋来, Maksym Gusyev, 玉川勝徳, 長谷川聡, 小池俊雄, ベトナム3都市圏における豪雨の温暖化影響, 日本気象学会2018年度秋季大会, 日本気象学会, 仙台国際センター, 2018年10月29日~11月1日
- S.Egashira, Sediment and driftwood-sunoffs resulting from landslides and debris flows, and their impacts on flood flows, 5th International Debris Flow Workshop, Beijing, November 5-6, 2018
- Y. Yamazaki, S.Egashira, Formation process of natural dam resulting from landslides and debris flow, 5th International Debris Flow Workshop, Beijing, November 5-6, 2018
- T.S. Ahmed, S. Egashira, D. Harada, A. Yorozuya, Y. Kwak, On bank erosion in estuary of sittaung river in Myanmar, The 9th International Conference on Scour and Erosion, The 9th International Conference on Scour and Erosion, Taipei, Taiwan, November 5-8, 2018
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- Y. Yamazaki, S.Egashira, N.Nagumo, Method to predict sediment runoff resulting from landslides and debris flows, The 9th International Conference on Scour and Erosion, The 9th International Conference on Scour and Erosion, Taipei, Taiwan, November 5-8, 2018
- M. Stewart, U. Morgenstern, M. Tsujimura, M. Gusyev, K. Sakakibara, Y. Imaizumi, H. Rutter, R. van der Raaij, Z. Etheridge, and L. Scott (2018). Subsurface Flowpaths of Christchurch Springs. Poster Presentation at the Joint Conference of New Zealand Hydrological Society and Meteorological Society, Christchurch, December 4-7, New Zealand
- 原田大輔, 移流拡散方程式を用いた洪水流に伴う流木の解析, 基礎水理シンポジウム2018「流木の現象と力学」, 土木学会 水工学委員会 基礎水理部会, 土木学会講堂, 2018年12月14日

3. Poster Presentation / ポスター発表

- 大原美保, 南雲直子, 平成30年7月豪雨での地域別・年齢階級別死者発生状況に関する一考察, 地域安全学会秋季大会, 地域安全学会, 静岡県地震防災センター, No.43, pp.103-106, 2018年11月2~3日
- Imaizumi, Y., Tsujimura, M., Yamamoto, C., Sugiyama, A., Ogawa, M., Sakakibara, K., Kato, K., Mizugaki, S., Katsuyama, M., Yamada, T., Yano, S., Sasakura, N., Gusyev, M., Morgenstern, U., Stewart, M. (2018). Relationship between residence time and microbe information in spring water in headwater catchments underlain by different lithology. Poster Presentation H13N-1961, the AGU 2018 Fall Meeting, Washington D.C., December 10-14, USA

4. Magazine, Article / 雑誌、記事 (土技資含む)

None / 該当無し

5. PWRI Publication / 土研刊行物 (土研資料等)

None / 該当無し

6. Others/ その他

- 小池俊雄, 豪雨対策 見直し議論 -わがこと感育てる- (インタビュー記事), 中国新聞 朝刊, 2018年12月2日

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