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ICHARM

International Centre for Water Hazard and Risk Management
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Message from Executive Director

Sharing the uncertainty of hydroclimatic extremes

Predicting extreme hydroclimatic events is fraught with uncertainty. These include uncertainties related to the quality and quantity of observational data, the reproducibility of models, the chaotic nature of atmospheric phenomena, internal climate variability, and the spatial heterogeneity of terrestrial hydrological processes. Forecasting is the process of communicating predictions to society using expert knowledge considering these factors of uncertainty. Since W.E. Cooke expressed the uncertainty of weather forecasts in Western Australia as having five levels in 1906, experts have discussed effective ways of communicating weather forecasts for over a century.

Executive Director Koike delivers a keynote speech at the Seventh Special Thematic Session on Water and Disasters on July 8, 2025, at the UN ECOSOC Chamber in New York.
国連第7回水と災害に関する特別会合でキーノートスピーチを行う小池センター長（国連経済社会理事会会議場、ニューヨーク、2025年7月8日）

In Japan, following the 2011 Kii Peninsula flood disaster, caused by torrential rains exceeding 2,000 mm during the event, the Japan Meteorological Agency (JMA) began issuing "special heavy rain warnings" in addition to warnings about tsunamis, volcanoes, and earthquakes. These warnings include a phrase: "This is an extraordinary, once-in-decades situation unlike any we have ever experienced, with serious danger impending."

Here are more recent examples. The prediction of linear precipitation zones, where cumulonimbus clouds form successively in a line and cause heavy rain in the same area, is still a work in progress. However, due to the significant societal impact of this phenomenon, JMA has begun issuing "weather information on extreme rainfall" since 2021, based on observational data, which warns: "In region X, extremely heavy rain caused by a linear precipitation zone is continuing over the same location. The risk of life-threatening landslides and floods is rapidly increasing." In 2022, JMA started to issue another type of warning to inform the public about the possibility of heavy rain caused by a linear precipitation zone approximately half a day in advance, which states: "In Prefecture Y, there is a possibility that a linear precipitation zone will form, rapidly increasing the risk of a major disaster."

According to a 2021 survey by JMA, over 70% of the municipalities reported that "weather information on extreme rainfall" helped them increase awareness of coming crises they may face. Over 80% of them found this information either "useful" or "somewhat useful" when making decisions on which disaster prevention measures to implement. Of the 102 municipalities that provided these responses, 63 reported specific examples of how they utilized the information. Their proactive stance based on these warnings is highly reassuring, given that municipalities are responsible for creating flood and landslide hazard maps and issuing evacuation information. I believe that their approach will encourage residents to take preventive actions, thereby enhancing community resilience to water-related disasters.

July 31, 2025
KOIKE Toshio
Executive Director

水文気候の極端事象の不確実性の共有

水文気候現象の極端事象の予測には様々な不確実性が含まれます。観測データの質や量、モデルの再現性による不確実性に加え、大気現象のカオス的な性質や気候の内部変動性、また陸域水文過程は場の不均一性によって不確実性が増します。専門的知識を用いて、予測を社会に伝えることを予報と言います。W.E Cooke が 1906 年にオーストラリア西部の気象予報の不確実性を 5 段階に表現して以来、気象予報の伝え方が長く検討されてきました。

日本では、2000 ミリを超える豪雨に見舞われた 2011 年の紀伊半島大水害を契機に、津波・火山・地震とともに、「大雨特別警報」が発令されるようになりました。この提供には、『数十年に一度の、これまでに経験したことのないような、重大な危険が差し迫った異常な状況にあります。』というメッセージが使われています。

積乱雲が次々と発生して列状になって同じ地域に大雨を降らせる線状降水帯の予測は、まだ研究開発途上です。しかしその社会に与える影響が大きいために、2021 年からは、観測データを用いて、『X 地方では、線状降水帯による非常に激しい雨が同じ場所で降り続いています。命に危険が及ぶ土砂災害や洪水による災害発生の危険度が急激に高まっています』という「顕著な大雨に関する気象情報」が出されています。また 2022 年からは、「線状降水帯による大雨の可能性の半日程度前からの呼びかけ」が加えられ、『Y 県では、線状降水帯が発生して大災害発生の危険度が急激に高まる可能性あります』という表現が使われています。

気象庁が実施した 2021 年アンケート調査によれば、「顕著な大雨に関する気象情報」によって 7 割以上の市町村で危機感が高まり、市町村が実施する防災対応に「役に立った」又は「どちらかというと役に立った」と回答は 8 割以上に及んでいます。またこのように回答した 102 の市町村のうち 63 から、情報の具体的な活用例が報告されています。洪水ハザードマップや土砂災害ハザードマップの作成と避難情報を出す責任を有するこのような市町村の姿勢の高さが、住民による事前の行動へとつながり、水災害レジリエンスが向上していくことが望まれます。

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Special Topics

Long-Term Contribution Award presented by UNESCO
UNESCO 貢献賞を受賞

In 2025, UNESCO marks two major milestones: the 60th anniversary of the International Hydrological Decade (IHD) and the 50th anniversary of the International Hydrological Programme (IHP). To commemorate these occasions, UNESCO hosted a series of celebratory events in Paris, France, from June 10 to 13. During the main event on June 11, ICHARM was honored on stage with a commemorative plaque in recognition of its longstanding global contributions to research, education, and information networking as a UNESCO Category II Centre since its establishment.

Executive Director Koike Toshio holding the commemorative plaque (from left: Abu Amani, the director of UNESCO Water Science, and the secretary of IHP; Lidia Arthur Brito, the assistant director-general for UNESCO Natural Sciences; and Helmut Habersack, the chairperson of the IHP Council).
表彰盾を受ける小池センター長
（左から、アブ・アマニ UNESCO 水科学局長兼 IHP 事務局長、リディア・アーサー・ブリト UNESCO 事務局長補、小池センター長、ヘルムート・ハーバーザック IHP 政府間運営理事会議長）

The commemorative plaque presented to ICHARM
UNESCO 貢献賞記念盾

本年（2025 年）は、UNESCO(国際連合教育科学文化機関) が主導する「国際水文学 10 年計画 (IHD)」開始 60 年、「国際水文学計画 / 政府間水文学計画 (IHP)」開始 50 年の節目に当たり、これらを記念して、6 月 10 ～ 13 日にパリにて UNESCO が主催する記念事業が開催されました。そのメインイベント（6 月 11 日）において、UNESCO のカテゴリー II センターとして、設立以来 ICHARM が行ってきた研究・教育・情報ネットワーキング活動の長年の貢献が表彰され、ステージにて盾が授与されました。

(Written by KOIKE Toshio)

The 9th ICHARM Governing Board Meeting
第 9 回 ICHARM 運営理事会会合を開催

Group photos: the GB members, observers and GB secretariat members (left photo), GB secretariat members (right photo)
集合写真 : 参加委員、オブザーバーおよび運営理事会事務局（左写真）、運営理事会事務局（右写真）

ICHARM held its 9th Governing Board (GB) Meeting online on June 23, 2025. In accordance with the agreement signed between the government of Japan and UNESCO, the GB meeting is held once a year to review and adopt ICHARM's yearly activity report and work plan. All seven GB members were present, including FUJITA Koichi, the president of the Public Works Research Institute (PWRI), who chaired the meeting. Also at the meeting were observers from the Ministry of Foreign Affairs, the Ministry of Education, Culture, Sports, Science and Technology, and the Japan International Cooperation Agency.

ICHARM は、2025 年 6 月 23 日に第 9 回 ICHARM 運営理事会会合を開催しました。運営理事会会合は、日本国政府とユネスコとの協定に基づき、ICHARM の活動に関する報告書（Activity Report）の審査、事業計画（Work Plan）の審査・採択などのために、年に一度開催しています。本会合は 7 名の委員で構成され、完全オンライン方式で開催しました。議長は土木研究所・藤田光一理事長が務め、オブザーバーとして外務省、文部科学省、（独）国際協力機構（JICA）にも参加していただきました。

南雲直子専門研究員の司会の下、まず藤田理事長が開会挨拶として、来年 20 周年を迎える ICHARM が水災害の分野において、研究、研修、情報ネットワークの三本柱の活動で数多くの実績を残し、今年 2 月にユネスコが実施した ICHARM の活動評価においても高く評価いただいたことを報告しました。併せて、水に関

係する幅広い分野、特に衛生、貧困、平和に関する学識を深めるために拡充した ICHARM カリキュラムにも言及しました。

次に、小池俊雄センター長および南雲専門研究員から、2024 年度の主な ICHARM 活動成果として、水・土砂・流木を一体的に解析するモデル（RSR モデル）のインターフェースの整備、仮想洪水体験システムの活用による中学校での防災教育の実施、修士課程と博士課程のカリキュラムの拡充、世界銀行インドプロジェクトやユネスコガーナプロジェクトへの参画、主要な国連組織や外国政府との国際ネットワーキング活動などを説明し、審査を受けました。続いて、ICHARM 20 周年記念行事案を説明し、ご意見をいただきました。

最後に、各委員から総括的なコメントをいただいた後、土木研究所藪雅行理事が閉会挨拶を述べました。藪理事は、各委員の支援に謝意を表するとともに、いただいたご意見を今後の ICHARM の活動に反映させ、期待に応えられるよう ICHARM として全力を尽くす旨発言しました。

ICHARM では、事業計画に基づき、委員の皆様よりいただいたご助言などを踏まえ、今後とも精力的に活動に取り組んで参ります。

なお、本会合での配布資料および発表スライドは、下記 ICHARM ホームページでご覧いただけます。

（日本語版）
https://www.pwri.go.jp/icharm/about/governingboard_j.html
（英語版）
https://www.pwri.go.jp/icharm/about/governingboard.html

以下に、会合における委員の主なご発言を記載します。

廣瀬昌由委員（国土交通省　技監）

・ICHARM は、最新の科学技術開発を進めるとともに、修士課程と博士課程のカリキュラムの拡充など、広い視野を持って水災害の軽減等をリードする人材の育成に貢献していると認識。

・国土交通省として、引き続き ICHARM の活動を支援していく。ICHARM には、今後も世界の水災害被害軽減のための活動に邁進することを望む。

アブ・アマニ委員（ユネスコ水科学局長兼政府間水文学計画（IHP）事務局長）

・国際洪水イニシアティブ（IFI）の発展や IHP 第 9 期戦略計画の実施、他のユネスコセンターとのパートナーシップの推進など、ICHARM の貢献に感謝。

・アフリカやラテンアメリカ、カリブ海まで、活動範囲を広げていることも喜ばしい。

・ICHARM 20 周年記念行事では、ICHARM の実績や科学的な優位性を示すべき。

Moderated by ICHARM Research Specialist NAGUMO Naoko, the meeting began with opening remarks by the PWRI president. He reported that ICHARM, which will celebrate its 20th anniversary next year, had made many achievements in the field of water-related disasters through its three pillars of research, training, and information networking, and that they were highly regarded by UNESCO in its evaluation of ICHARM's activities conducted last February. He also mentioned the curriculums of ICHARM's educational programs, which has recently been expanded to cover a wide range of water-related fields, including sanitation, poverty, and peace.

Then, Executive Director KOIKE Toshio and Nagumo explained the principal activities that ICHARM carried out during FY2024. Their presentations included developing an interface for the Rainfall-Sediment Runoff model (RSR model), providing disaster prevention education at junior high schools using the Virtual Flood Experience System, expanding master's and doctoral programs, participating in the World Bank India Project and the UNESCO Ghana Project, and facilitating global-wide networking efforts to collaborate with UN organizations and foreign governments. The GB members reviewed these and other activities.

The executive director also proposed events for ICHARM's 20th anniversary and received feedback.

To wrap up the meeting, each GB member made an overall comment. Then, in his closing remarks, Vice President of PWRI YABU Masayuki thanked all the GB members for their support and stated that all the comments and suggestions provided by the GB members will be included in the ICHARM Work Plan and that, based on that, ICHARM will do its utmost to achieve the mission and meet the expectations through various projects and activities.

ICHARM will continue to work vigorously based on the work plan and on the advice given by the GB members.

The documents and presentation slides used for the meeting are available at the following address:

https://www.pwri.go.jp/icharm/about/governingboard.html

Listed below are the governing board members with a summary of their comments:

【HIROSE Masayoshi, Vice Minister for Engineering Affairs, Ministry of Land, Infrastructure, Transport and Tourism (MLIT)】

- ICHARM contributes to the development of human resources capable of taking the lead in water-related disaster risk reduction and other relevant areas with a broad perspective by promoting the latest scientific and technological developments and expanding the curriculum of its master's and doctoral programs.
- MLIT will continue to support ICHARM and hopes that it will keep making strides in reducing water-related disaster damage worldwide.

【Abou AMANI, Director of the Division of Water Sciences and Secretary of the Intergovernmental Hydrological Programme, United Nations Educational, Scientific and Cultural Organization (UNESCO)】

- UNESCO appreciates ICHARM's contributions to the development of the International Flood Initiative (IFI), implementation of the ninth phase of the Strategic Plan of the Intergovernmental Hydrological Programme (IHP-IX), and promotion of partnerships with other UNESCO centers.
- UNESCO is also glad to see that ICHARM is expanding its activity area to Africa, Latin America, and the Caribbean.
- ICHARM's achievements and scientific excellence should be demonstrated at ICHARM's 20th anniversary celebration.

【KIJIMA Yoko, Vice President, National Graduate Institute for Policy Studies (GRIPS)】

- GRIPS is always grateful to ICHARM for their guidance to my students.

【MATSUOKA Yuki, Head, United Nations Office for Disaster Risk Reduction (UNDRR) Kobe Office】

- ICHARM should continue to improve how it shares and disseminates its excellent activities and information. For example, the Regional Platforms and Global Platforms organized by UNDRR attracts more than 3,000 participants from the international DRR community and are meaningful opportunities to disseminate ICHARM's achievements.
- As shared repeatedly in previous GP meetings, UNDRR is committed to achieving gender equality and equity. Therefore, we reiterated our request that gender-related information be regularly included in the Activity Report presented at Governing Board meetings, such as the percentage of female participants in ICHARM's training and workshops. UNDRR wishes to express its concern that, despite the fact that the same comment was made at the last GB meeting, gender-related statistics were not included again in this year's Activity Report.
- For ICHARM's 20th anniversary celebration, it would be effective not only to present an overview of ICHARM's activities, but also to outline the impacts and achievements of these activities on the target countries and the international community through a compelling narrative, incorporating voices from those who have benefitted from ICHARM's activities along the relevant figures in an easy-to-understand way.

【TACHIKAWA Yasuto, Chair Holder, UNESCO Chair on Water, Energy and Disaster Management for Sustainable Development (WENDI)】

- ICHARM has consistently made excellent contributions to research and development, as well as human resource development, in water hazard prevention and mitigation and demonstrated great leadership during IHP's 50th anniversary celebration.
- ICHARM's 20th anniversary celebration should be used to gather feedback from alumni and update the curriculum.

【Stefan UHLENBROOK, Director of Hydrology, Water and Cryosphere Division, World Meteorological Organization (WMO)】

- ICHARM undertakes very comprehensive research and he congratulates ICHARM; however, it should consider setting clear priorities if it is to sustain cutting-edge work in the face of growing competition and limited resources.
- WMO has been building an integrated flood and drought warning system in the Volta River Basin in West Africa for many years, and has a platform that can integrate the results of various models. It would be good to integrate ICHARM's Ghana project results on operational flood modelling into this platform.
- The United Nation's "Early Warning Systems for All" initiative and others can be used to further internationalize ICHARM activities and increase its outreach.

木島陽子委員（政策研究大学院大学 副学長）

・ICHARM には学生を指導してもらっており、いつも感謝している。

松岡由季委員（国連防災機関（UNDRR）駐日代表）

・ICHARM の素晴らしい活動や情報の共有・発信については、さらなる改善を期待する。例えば、UNDRR が主催する地域別プラットフォームとグローバルプラットフォームは国際的な防災コミュニティーから3,000 人以上の参加者が集まるので、成果を発信する有用な機会である。

・これまで何度も共有してきたことであるが、UNDRR はジェンダー平等や公平性を重視しており、ICHARM の研修やワークショップなどに参加した女性の割合などについて、運営理事会に配布される報告書に継続的に記載することを再度求める。前回も全く同じ指摘をしたが今回も含まれなかったことを懸念する。

・ICHARM 20 周年記念行事では、ICHARM の活動の紹介だけでなく、それらの活動が活動対象の国々や国際社会に与えた影響・成果を、わかりやすい数字などとともに、恩恵を受けた側の声も含めてストーリーとして紹介するのが効果的と思われる。

立川康人委員（水・エネルギー・災害研究に関するユネスコチェア チェアホルダー）

・水災害の防止・軽減に関する研究開発や人材育成に対する ICHARM の貢献、IHP 50 周年記念イベントでのリーダーシップに感謝。

・ICHARM 20 周年記念行事の機会を利用して、同窓生のフィードバックを集め、カリキュラムのアップデートに活用すべき。

ステファン・ウーレンブルック委員（世界気象機関 水文・水および雪氷圏担当部長）

・ICHARM の研究活動が非常に包括的であることを称賛するが、昨今の競争の激化や限られたリソースの下で最先端の研究を維持していくには、優先順位づけを行うべき。

・WMO は長年、西アフリカのボルタ川流域で統合的な洪水・干ばつの警報システムを構築しており、様々なモデルの結果を統合できるプラットフォームがある。ICHARM のガーナプロジェクトにおける洪水モデリング運用の成果をこのプラットフォームに統合すると良い。

・国連の「すべての人に早期警報システムを」イニシアティブ等を活用して、ICHARM 活動のさらなる国際展開とアウトリーチの拡大が可能。

(Written by TAKEGAWA Shinya)

Senior Researcher Miyamoto appointed as WMO RA II Regional Hydrological Advisor
ICHARM 研究員が世界気象機関の地域水文アドバイザーに就任

世界気象機関（WMO）の第 79 回執行理事会が 2025 年 6 月 16 日から 20 日にジュネーブで開催され、第 2 地域協会の地域水文アドバイザーに宮本守主任研究員が就任することが決定しました。

WMO は世界を 6 つの地域に分け、それぞれに地域協会を設置し、地域の優先課題や活動内容を策定しています。アジア・中東地域をカバーする第 2 地域協会は、35 の国と地域で構成されています。地域水文アドバイザーは、水文分野における地域の優先課題に対して技術的・科学的視点から方針を提案するとともに、加盟国・地域の水文サービスの強化や、地域ニーズに応じた水文関連プログラムの推進など、重要な役割を担います。

宮本主任研究員の就任により、第 2 地域協会の各メンバー間の連携とネットワーク強化、グローバル戦略の地域展開、さらに気候変動下における水文サービスの高度化や早期警報システムの向上、そして水災害レジリエンスの推進が期待されます。特に、国際洪水イニシアティブが支援する水のレジリエンスと災害に関するプラットフォームや台風委員会等との連携を通じた実務レベルでの技術・制度の橋渡し役として大きな期待が寄せられます。

世界気象機関第 2 地域協会の情報はこちら
https://community.wmo.int/en/governance/Regional-Association/RA-II

The 79th Executive Council of the World Meteorological Organization (WMO) was held in Geneva, Switzerland, from June 16 to 20, 2025. During the conference, the council approved the appointment of Senior Researcher MIYAMOTO Mamoru as the regional hydrological advisor for WMO's Regional Association II.

WMO divides the world into six regions, each with its regional association responsible for setting regional priorities and activities. Regional Association II, encompassing Asia and the Middle East, comprises 35 countries and territories. The regional hydrological advisor will play a key role in providing technical and scientific guidance on hydrological priorities, strengthening hydrometeorological services in member countries and territories, and advancing hydrological programs tailored to regional needs.

His appointment is expected to help the regional members strengthen collaboration and networking, implement global strategies, improve hydrological services and early warning systems in the face of climate change, and enhance water-related disaster resilience. Notably, high expectations are placed on his liaison role for technical and institutional cooperation with international organizations and projects, such as the Typhoon Committee and the Platforms on Water Resilience and Disasters, supported by the International Flood Initiative.

For more information on WMO Regional Association II:
https://community.wmo.int/en/governance/Regional-Association/RA-II

Information Networking

Participation in a side event during the ESCAP 81st Committee session
ESCAP 第 81 回委員会のサイドイベントへの参加

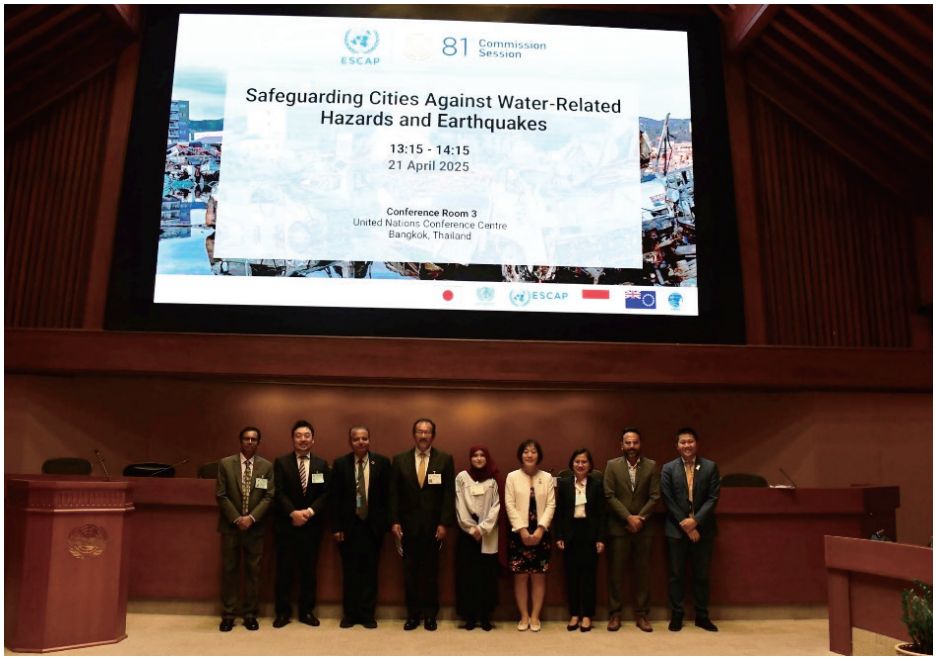
国連アジア太平洋経済社会委員会（ESCAP）の第 81 回委員会が「アジア太平洋地域における強靭で持続可能な都市開発のための地域協力」というテーマの下に 2025 年 4 月 21 日から 25 日までタイ・バンコクで開催され、アジア太平洋諸国の大臣や主要な関係者が一堂に会し、アジア太平洋における包摂的かつ持続可能な開発に向けた現在と将来の政策課題について意見交換が行われました。ICHARM からは、宮本守主任研究員が参加し、4 月 21 日に開催されたサイドイベント「水関連災害と

The 81st session of the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) was held in Bangkok, Thailand, from April 21 to 25, 2025, under the theme "Regional Cooperation for Resilient and Sustainable Urban Development in the Asia-Pacific Region." Ministers and key stakeholders from Asia-Pacific countries gathered to exchange views on current and future policy challenges for inclusive and sustainable development in the region. From ICHARM, Senior Researcher MIYAMOTO

Senior Researcher Miyamoto (first from right) at the panel discussion
パネルディスカッションの様子

Mamoru participated and spoke as a panelist at a side event, "Safeguarding Cities Against Water-Related Hazards and Earthquakes," held on April 21. During the panel discussion, where the panelists debated on data necessary for accurate disaster analysis and prediction, Miyamoto introduced efforts related to the Platform on Water Resilience and Disasters, which promotes the use of satellite data and data integration in water-related disaster management. He also shared examples of satellite rainfall data utilization in discussions about the accuracy of satellite data.

Additionally, during this opportunity, a separate meeting was arranged with Dr. Khaled Mashfiq who, the regional liaison officer of the United Nations Satellite Centre (UNOSAT), for participating organizations to present their activities. Miyamoto discussed potential collaboration between UNOSAT and ICHARM with him, for example, in the development of mapping systems that visualize multi-hazard risks, population, and land use using satellites to support local decision-making. ICHARM aims to continue strengthening such international partnerships to enhance global resilience to water disasters.



Ambassador Extraordinary and Plenipotentiary to the Kingdom of Thailand Masato Ōtaka (fourth from left) and side event speakers
大鷹正人駐タイ王国特命全権大使（左から 4 人目）とサイドイベントの登壇者

(Written by MIYAMOTO Mamoru)

地震から都市を守る」ではパネリストとして登壇しました。パネルディスカッションでは災害の正確な分析と予測に必要となるデータが議論され、宮本主任研究員から水防災における衛星データの活用とデータ統合を推進す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が紹介されました。また、衛星データの精度に関する議論では、衛星雨量データの活用事例を紹介しました。

また、このような機会を通じて国連衛星センター（UNOSAT）の Khaled Mashfiq 氏とは各機関の活動内容を紹介する個別の打ち合わせを設けることができ、UNOSAT と ICHARM と連携可能性について衛星利用による複合災害ハザードや人口・土地利用条件などの視覚化システムによるローカルの意思決定支援などのテーマで議論しました。ICHARM ではこのような国際的連携を今後も引き続き強化し、水災害レジリエンスの向上に努めたいと考えています。

Visit by scientists from China's Water Resources and Hydropower Research Institute
中国水利水電科学研究院から研究員が訪問

On April 23, 2025, four representatives from the Institute of Water Resources and Hydropower Research (IWHR) of the People's Republic of China visited ICHARM to exchange ideas and discuss simulation and early warning techniques related to flash flood-induced debris flow disasters.

At the beginning of the meeting, Deputy Director KUSAKABE Takaaki and Professor ZHANG Cheng gave opening remarks, followed by an introduction of ICHARM by the deputy director.

Then, Senior Researchers USHIYAMA Tomoki and MOHAMED Rasmy and Research Specialist QIN Menglu presented their research on meteorological forecasting, hydrological forecasting, and sediment transport, respectively. Chinese counterparts also delivered presentations on their research.

急激な洪水や土石流災害のシミュレーションや早期予測に関する意見交換のため、中華人民共和国の水利水電科学研究院の 4 名の研究者が 4 月 23 日に ICHARM を訪問しました。

最初に、日下部隆明グループ長と ZHANG Cheng 教授による開会の挨拶、日下部グループ長による ICHARM の紹介を行いました。

続いて、日本側から牛山朋來主任研究員による気象予測、モハメッド・ラスミー主任研究員による水文予測、秦梦露専門研究員による土砂輸送について、それぞれ ICHARM における研究を紹介しました。

続いて、ZHANG Cheng 教授から中国水利水電科学研究院の紹介とデジタルツインを用いた洪水防災の説明、LIU Longhua 教授から急激な洪水のモニタリングと予測について、TIAN Jiyang 博士からはレーダーによる降水観測技術の向上について、そして LIU Xiao 博士から不確実性に基づくリスク管理の話題が発表されました。中国水利水電科学研究院では、研究だけでなく、成果が現業の予測に積極的に使用されており、AI を用いた研究も進んでいました。

両国の発表の後、非常に活発な議論が続き、お互いの研究に対する関心の高さがうかがえました。これらの発表が、両国の洪水防災に資することを期待します。

After providing an overview of IWHR, Professor Zhang, spoke about flood disaster prevention using digital twins. Professor LIU Longhua discussed flash flood monitoring and forecasting, Dr. TIAN Jiyang presented on improving precipitation observation technology using meteorological radar, and Dr. LIU Xiao addressed risk management based on uncertainty. Their presentations highlighted that IWHR effectively utilizes research findings for forecasting purposes and actively promotes AI-based research.

Following the presentations, members from both institutes engaged in lively discussions, which demonstrated a high level of interest in each other's research. Both parties hope the insights gained through this opportunity will contribute to flood disaster prevention in both countries.

Researchers of IWHR and ICHARM
会議の後講堂にて記念撮影

(Written by USHIYAMA Tomoki)

Visit by ICIMOD director general
国際山岳総合開発センター事務総長が講演

5 月 8 日、大阪万博のフォーラムでの基調講演のために来日していた国際山岳総合開発センター (International Centre for Integrated Mountain Development (ICIMOD)) の Director General(DG) の Pema Gyamtsho 氏が、同フォーラムにパネリストとして小池センター長が登壇していた縁もあり、ICHARM において講演をしていただきました。

Pema 氏はブータン王国の元農林大臣で、ICIMOD は 1983 年の創設以来、出資基金元の欧州人 DG が続きましたが、ヒンドゥー・クシュ・ヒマラヤ（HKH）地域の 8 か国から初の DG となられた方です。

「ヒマラヤ地域を気候危機から守る（Safeguarding the Himalayan Region from Climate Crisis)」と題した講演では、同地域の過酷な地形気象環境、気候変動による氷河の変化とそれに伴う土砂洪水災害の多発と、ICIMOD の活動が紹介され「1.5℃は熱すぎる」というキャッチフレーズで締めくくられました。

ICHARM で氷河を研究テーマとしているネパール、パキスタン、アフガニスタンの留学生や、大阪万博での同フォーラムでファリシテー

On May 8, Director General Pema Gyamtsho of the International Centre for Integrated Mountain Development (ICIMOD) gave a presentation at ICHARM. He was visiting Japan to deliver a keynote speech at a forum held at the 2025 Osaka Expo and accepted an invitation from Executive Director KOIKE Toshio, who was at the same forum as a panelist.

Dr. Pema, the former Minister of Agriculture and Forestry of the Kingdom of Bhutan, is the first director general appointed from one of the eight countries in the Hindu Kush Himalayan (HKH) region since ICIMOD was founded in 1983; all previous director generals were from the center's primary funding nations in Europe.

ICIMOD Director General Pema Gyamtsho delivering a presentation
国際山岳総合開発センター事務総長 Pema Gyamtsho 氏の講演の様子

In his talk entitled "Safeguarding the Himalayan Region from Climate Crisis," he explained the region's harsh topography and weather conditions, changes in glaciers due to climate change, and the resulting frequent occurrence of landslide-induced flood disasters. He also outlined ICIMOD's activities to address these and other challenges, concluding with the slogan "1.5°C is too hot."

Following the presentation, lively discussions took place, joined by other participants, including students from Nepal, Pakistan, and Afghanistan who are researching glaciers at ICHARM and Professor HIROKI Kenzo of National Graduate Institute for Policy Studies (GRIPS), who was also at the Osaka Expo forum as the facilitator.

After the presentation and discussions
講演とディスカッションの後の集合写真

タを務めた政策研究大学院大学（GRIPS）の廣木謙三教授も参加していただき、活発な議論が行われました。

(Written by FUJIKANE Masakazu)

Participation in Typhoon Committee meetings
台風委員会諮問部会および防災部会年次会合への参加

From May 27 to 30, 2025, the 20th Annual Meeting of the Typhoon Committee (TC) Working Group on Disaster Risk Reduction (WGDRR) was held in Seoul, South Korea, hosted by the National Disaster Management Institute (NDMI) of South Korea. Concurrently, the Advisory Working Group (AWG) meeting also took place. The TC consists of four working groups: the Working Group on Meteorology (WGM), the Working Group on Hydrology (WGH), the Working Group on Disaster Risk Reduction (WGDRR), and the Training and Research Coordination Group (TRCG). The AWG oversees these four working groups and plays a coordinating role for overall alignment. The meetings were attended by over 50 participants from 11 countries and territories (China, Hong Kong, Macau, Japan, Laos, Malaysia, the Philippines, South Korea, Thailand, Vietnam, and the United States), , and the TC Secretariat, as well as representatives from the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP), the World Meteorological Organization (WMO), and the United Nations Office for Disaster Risk Reduction (UNDRR). From ICHARM, Senior Researcher MIYAMOTO Mamoru participated as the WGH chair.

Senior Researcher Miyamoto at the WGDRR meeting
会議の様子

During the WGDRR meeting, international organizations and research institutions presented the latest initiatives and knowledge-sharing efforts in disaster risk reduction, leading to active discussions. The AWG addressed various agenda items for the current term, including preparations for the 20th Integrated Workshop, the

2025 年 5 月 27 日から 30 日にかけて、韓国 NDMI（National Disaster Management Institute）の主催により台風委員会第 20 回年次防災部会（WGDRR）が韓国ソウルで開催され、それに合わせて諮問部会（AWG）も開催されました。なお、台風委員会（TC）は気象部会（WGM）、水文部会（WGH）、防災部会（WGDRR）、トレーニング・研究連携部会（TRCG）の 4 つの部会で構成されており、各作業部会を統括し全体調整を諮る役割を諮問部会（AWG）が担っています。会議には 11 の国・地域（中国、香港、マカオ、日本、ラオス、マレーシア、フィリピン、韓国、タイ、ベトナム、アメリカ）と ESCAP、WMO、台風委員会事務局から 50 名以上の参加者があり、ICHARM からは水文部会の議長として宮本守主任研究員が参加しました。

防災部会の会合では国際機関や研究機関から防災に関する最新の取り組みや知の共有について発表があり、活発な議論が行われました。諮問部会では第 20 回統合部会（IWS）の開催へ向けた議論や台風委員会若手研究奨励賞の創設、年次総会に向けた取り決めなど、今期の様々な議題が議論されました。ICHARM では、台風委員会を水災害レジリエンス向上のための最も重要な国際的枠組み

の１つと理解し、引き続き地域間協力の強化に貢献する所存です。

establishment of the Typhoon Committee Research Award of Young Scientists, and arrangements for the upcoming annual session.

ICHARM recognizes the TC as one of the most important international frameworks for enhancing water-related disaster resilience and remains committed to contributing to strengthening regional cooperation.

Participants in the 20th annual meeting of TC WGDRR
台風委員会防災部会年次会合の参加者

(Written by MIYAMOTO Mamoru)

ADB Workshop to develop the “Asian Water Development Outlook 2025” report
「2025 年アジア水開発展望」報告書作成を目的としたアジア開発銀行によるワークショップ

5 月 28 日～ 29 日に、アジア開発銀行（ADB）本部において、「2025 年アジア水開発展望（AWDO）」報告書を作成するコンサルテーション・ワークショップが開催され、岡田智幸上席研究員が参加しました。3 月に続き 2 回目となるこのワークショップは、ADB の水・都市開発フォーラムの一部として開かれました。

AWDO は、アジア太平洋地域の水安全保障の推移を把握し、水管理の重要な課題を取り上げることを目的としています。ADB は、2007 年からこれまで、AWDO シリーズの報告書を 4 冊出版しました。2025 年版 AWDO を作成するにあたり、ICHARM は洪水と渇水に対する気候変動の影響を、アジアの全 50 カ国・地域について分析しました。具体的には、降雨量の将来変化を水文のハザード（すなわち洪水）、また標準化降水指数（SPI）の将来変化を気候のハザード（渇水）として予測しています。分析結果は、協力機関である IHE デルフト水教育研究所と連携しながら、五つの指標の一つである「第 5 指標：水関連災害に関する安全保障」に組み込みました。

本ワークショップでは、ADB の専門家や加盟国代表者が、各指標の算定手法や結果について意見を述べました。外部の確認を経て完成予定の 2025 年版 AWDO は、2025 年 12 月に国際水協会（IWA）がバンコクで開く「水と開発の会議・展示会」で公開されます。アジア諸国すべてを網羅した ICHARM の分析は、気候帯

On May 28-29, Chief Researcher OKADA Tomoyuki participated in a consultation workshop at the headquarters of the Asian Development Bank (ADB) to prepare the Asian Water Development Outlook (AWDO) 2025 report. This second workshop, following the first in March 2025, was organized as part of ADB’s Water and Urban Development Forum.

AWDO aims to track the water security status and highlight critical water management issues in Asia and the Pacific. ADB has published four editions of the AWDO series since 2007. In preparation for the 2025 edition, ICHARM analyzed climate change impacts on floods and droughts for all 50 countries and economies in the region. Specifically, future changes in rainfall were estimated as hydrological hazards (namely floods), while future changes in the Standardized Precipitation Index (SPI) as climatological hazards (droughts). The results were incorporated into one of the five indicators, “Key Dimension 5: Water-related disaster security,” in cooperation with a partner organization, IHE Delft.

At the workshop, participants, including ADB experts and ADB member country representatives, reviewed the methods and outputs of each indicator. After completing an external review, the AWDO 2025 will be finalized and released at the Water and Development Congress & Exhibition hosted by the International Water Association (IWA) in Bangkok in December 2025. ICHARM’s comprehensive analysis

AWDO Workshop
「アジア水開発展望」ワークショップ

A plenary session at the Water and Urban Development Forum
水・都市開発フォーラムの全体会議

covering all Asian countries provided original insights into climate change effects closely related to climate zones.

と密接に関連した気候変動について新たな知見を提供しました。

ADB Water and Urban Development Forum 2025
https://adb.eventsair.com/awuf2025/

(Written by OKADA Tomoyuki)

Participation in celebratory events commemorating UNESCO's milestones
ユネスコ政府間水文学計画 50 周年・国際水文学 10 年計画 60 周年記念イベントへの参加

The year 2025 marks the 60th anniversary of UNESCO's International Hydrological Decade (IHD) and the 50th anniversary of the UNESCO Intergovernmental Hydrological Programme (IHP). To celebrate these milestones, Executive Director KOIKE Toshio, Senior Researcher MIYAMOTO Mamoru, and Research Specialist NAGUMO Naoko participated in commemorative events held at UNESCO headquarters from June 10 to 13, 2025.

Among the commemorative events were 27 side events and 2 pre events, in addition to the main event on June 11, with 650 onsite participants and 1,430 online. Japan hosted one of the side events on June 12, entitled "Frontiers in Hydrology and their Contributions to Water Security in a Changing World." Professor OKI Taikan of the University of Tokyo presented the results of the commemorative symposium held in Tokyo, Japan, in March 2025 (see ICHARM Newsletter No. 76). Following this presentation, Professor SAYAMA Takahiro of Kyoto University and Emeritus Professor Ian White of Australian National University reported the activities of the IHP Regional Steering Committee for Asia and the Pacific. Executive Director Koike also delivered a presentation titled "Together with Africa," reporting on ICHARM's research and information-networking activities in Africa. The event brought together numerous officials and researchers from UNESCO-related and other organizations, including Ms. Lidia Brito, the assistant director general for UNESCO's Natural Sciences and Mr. KANO Yudai, the ambassador and permanent delegate of Japan to UNESCO.

In collaboration with UNESCO and other relevant organizations, ICHARM will continue to engage in research, education, and information networking activities to support the next 50 years of IHP.

Scenes from the side event hosted by Japan
写真　サイドイベントの様子

2025 年はユネスコが主導する「国際水文学 10 年計画（IHD）」から 60 年、「国際水文学計画 / 政府間水文学計画（IHP）」創設から 50 年の節目となります。これを記念して 2025 年 6 月 10 ～ 13 日にユネスコ本部で開催された記念事業に、小池俊雄センター長、宮本守主任研究員、南雲直子専門研究員が出席しました。

今回の記念事業では、6 月 11 日のメインイベントに加え、27 のサイドイベント、2 つのプレイベントが開催され、対面で 650 人が、オンラインで 1,430 人が参加しました。このうち、6 月 12 日に開催されたサイドイベント「Frontiers in Hydrology and their Contributions to Water Security in a Changing World」は日本からの提案によるもので、まず、沖大幹東京大学教授が 2025 年 3 月に東京で開催された記念シンポジウム（ICHARM ニュースレター No. 76 参照）の成果を共有しました。次に、京都大学佐山敬洋教授、及びオーストラリア国立大学のイアン・ホワイト名誉教授が、IHP アジア太平洋地域運営員会の活動を報告しました。そして、小池センター長は「Together with Africa」と題する発表を行い、ICHARM が進めているアフリカでの研究・情報ネットワーキング活動について報告しました。会場には、ユネスコ自然科学部門の事務局長補の Lidia Brito 氏や、ユネスコ日本代表部特命全権大使の加納雄大氏をはじめとする、ユネスコ関係者、研究者らにお越しいただき、盛況のうちに閉会しました（写真）。

ICHARM では IHP の次の 50 年に向け、ユネスコや他の関係機関と協力しながら、研究・教育・情報ネットワーク活動に取り組んでいきます。

(Written by NAGUMO Naoko)

Research

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、(2)に関する取組例として秦　梦露専門研究員より「多様な土砂生産過程を考慮した流域の土砂流出過程の予測および洪水土砂氾濫への応用」を紹介します。

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, while remaining sensitive to local needs, priorities, development stages, and other factors, 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

In this issue, Research Specialist QIN Menglu shares her recent research, titled "Modeling of Basin-Scale Sediment Runoff Processes Considering Various Sediment Productions for the Assessment of Water and Sediment Inundation Hazards".

Modeling of Basin-Scale Sediment Runoff Processes Considering Various Sediment Productions for the Assessment of Water and Sediment Inundation Hazards
多様な土砂生産過程を考慮した流域の土砂流出過程の予測および洪水土砂氾濫への応用

QIN Menglu, Research Specialist
秦 梦露専門研究員

近年、極端な降雨によって引き起こされる崩壊・土石流に伴う洪水土砂氾濫災害が頻発しています。これらの災害は、山間部で発生した崩壊や土石流によって生産された大量の土砂が、洪水流とともに下流の平野部の河道に急激に堆積することにより発生していることが明らかになっています。一方で、豪雨や地震後の崩壊土砂の侵食に伴い、細粒土砂の流出が増加し、河川の濁水が長期化する問題も指摘されています。また、海外においては裸地の斜面における侵食による土壌流失が問題となる流域も多く、これらは長期的な土砂流出現象として注目されています。このような流域における多様な土砂の生産・流出現象を定量的に評価するために、流域内の任意の地点において、斜面での土砂生産・供給の影響を考慮しながら、降雨に伴う洪水、浮遊砂、掃流砂および河道内の貯留土砂の条件の時空間変化を予測する降雨土砂（生産）流出モデル（RSRモデル）を開発してきました。

図１に示すように、RSRモデルは、分布型の降雨流出モデルと、河道内の貯留土砂の変化および土砂流出を扱う単位河道モデルを結合した構成

In recent years, flood sediment inundation disasters associated with landslides and debris flows caused by extreme rainfall have been occurring frequently. It has become clear that these disasters are caused by the rapid deposition of large amounts of sediment produced by landslides and debris flows in mountainous areas along with floodwaters into river channels in downstream plain areas. On the other hand, it has also been pointed out that the erosion of collapsed sediment following heavy rains and earthquakes can lead to an increase in the discharge of fine sediment, resulting in prolonged turbidity in rivers. In addition, numerous river basins worldwide face soil erosion on exposed slopes. These are attracting attention as long-term sediment runoff phenomena. In order to quantitatively evaluate various sediment production and transport processes in a river basin, we have developed the Rainfall Sediment (Production) Runoff (RSR) model, which predicts spatiotemporal changes in flood, suspended sediment, bedload sediment, and river bed sediment conditions associated with rainfall runoff processes at an arbitrary location within a river basin, while taking into account the effects of sediment production and delivery from the slope.

As shown in Figure 1, the RSR model consists of a distributed rainfall-runoff model coupled with a unit river channel model that handles river bed elevation change and sediment transport processes within the river channel network (Figure 1(1)). In hillslope areas, the model incorporates the following components: landslide occurrence based on stability analysis, debris flow runout processes described in the point mass system (Figure 1(2)-①), and hillslope erosion caused by the surface flow on slope areas (Figure 1(2)-②). This allows the model to simulate both short-term

and long-term sediment production and transport processes throughout the entire catchment.

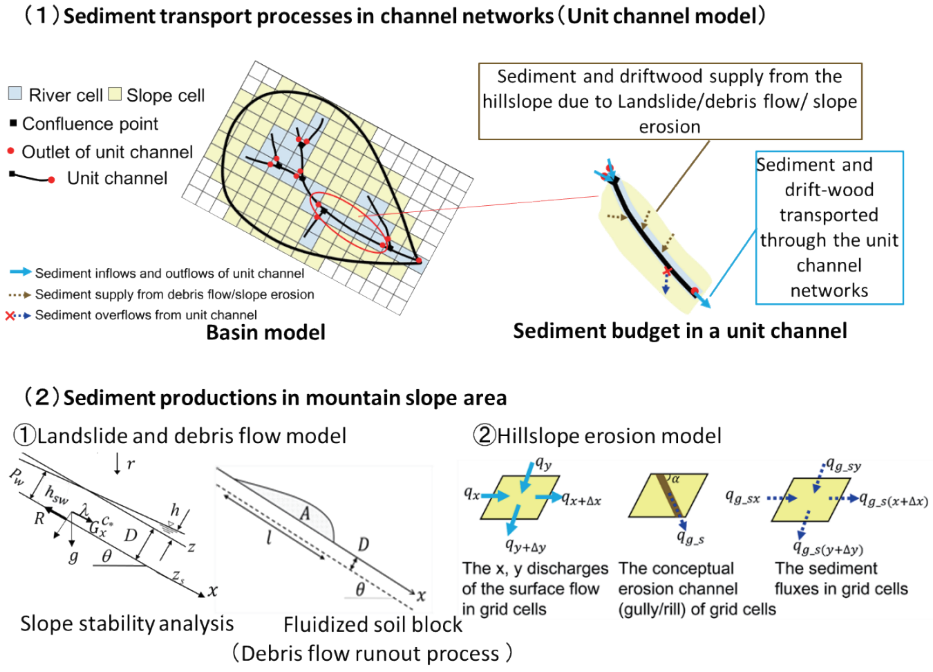


Figure1 The structure of the Rainfall and Sediment (production) Runoff Model (RSR- Model)
図 1　RSR-Model の概要

Unlike many conventional models that rely on empirical formulas, the RSR model employs mechanical-based sediment transport equations and approaches to simulate sediment production and transport processes. This facilitates the precise evaluation of sediment size distributions, including those that are delivered into river channels following erosion and deposition during transport processes at the hillslope areas.

Here, we present two case studies from Japan, for which relatively accurate sediment observational data are available, in order to demonstrate the model's performance and highlight the importance of sediment transport process-based analysis.

Figure 2 shows simulation results for the Abira River basin, a hilly watershed located in Hokkaido. The model successfully reproduced observed suspended sediment discharge during the flood. Comparison with a case excluding hillslope erosion confirmed that fine sediment supplied from upstream hillslopes affected the conditions of sediment flows in far downstream reaches*[1].

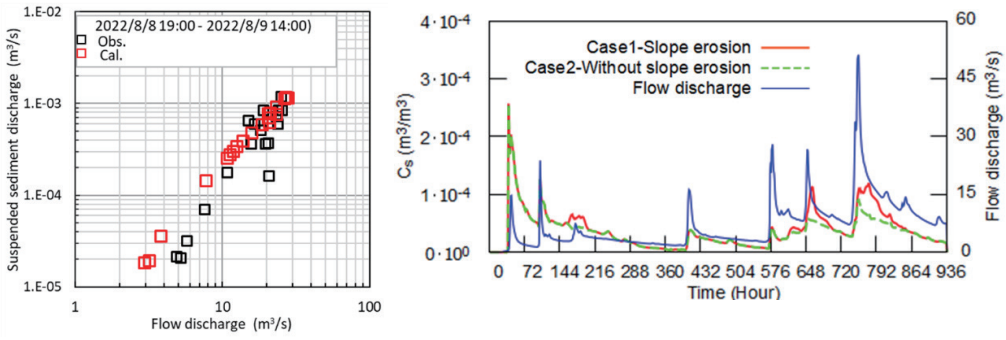


Figure 2 Comparison of suspended sediment flow and water flow discharge between calculation and observation (left); The influence of fine sediment supply by hillslope erosion on the sediment concentration (right)
図 2　浮遊砂・流量の計算結果と観測値との比較 (左) ；斜面侵食による細粒土砂の供給が浮遊砂濃度に与える影響

Figure 3*[2] illustrates the application of the RSR model, coupled with a depth averaged two-dimensional flow and sediment transport model, to the water and sediment inundation disaster that occurred in the Uchikawa River basin (Marumori Town, Miyagi Prefecture) during Typhoon Hagibis in 2019. As shown in Figure 3, the model accurately reproduced the deposition depth of the inundated sediment in the plain area. The analysis revealed that a large amount of sediment, produced by landslides and debris flows in the mountainous area, entered a small tributary

となっています（図 1(1)）。さらに、斜面領域においては、斜面安定解析に基づく崩壊の発生、質点系方程式に基づく土石流の流下（図 1(2)-①）、および表面流による斜面侵食に伴う土砂の生産・輸送（図 1(2)-②）を解析するサブモデルを組み込んでいます。そして、多くのモデルは経験式に依存しているため、流出・侵食・堆積の過程を経て河道網に供給される土砂の粒度分布を正確に評価することが困難である課題に対して、すべての土砂生産・流出現象に対して、力学に基づく解析手法および流砂量式を用いてモデルを構築し、流域における短期および長期の土砂生産・流出過程を精緻に予測することが可能となっています。

本稿では、日本国内において比較的精度の高い土砂観測データが得られている 2 つの適用事例を紹介し、RSR モデルの性能および、流砂過程に基づく土砂流出解析の重要性について示します。

図 2 は、北海道に位置する丘陵地の安平川流域において、斜面侵食による細粒土砂の供給が流域全体の土砂流出に与える影響を解析した結果です。計算された浮遊砂量は観測値と概ね一致しており、斜面侵食を考慮しないケースとの比較により、上流側から供給された細粒土砂が下流側の流砂に影響を及ぼしていることが確認されました *[1]。

図 3 と図 4 は *[2]、2019 年台風 19 号によって発生した、宮城県丸森町の内川流域における洪水土砂氾濫災害に、RSR モデルと平面二次元河床変動モデルを結合して適用した結果です。図 3 に示すように、平野部における氾濫土砂の堆積深・空間分布を高い精度で再現できていることがわかります。また解析結果から、山間部で発生した崩壊・土石流によって生産された大量の土砂が、平野部の小規模支川（五福谷川）に流入した際に急激な河床上昇を引き起こし、流路の網状化とともに広範囲な細粒土砂の堆積を誘発したメカニズムが明らかになりました。

また、図 4 は、RSR モデルにより予測された図 3 に示す平面二次元河床変動解析領域に流入する土砂および洪水のハイドログラフです。この結果から、洪水流のピークに先行して土砂流のピークが到達していたことが明らかとなり、上流側の山間部における崩壊・土石流からの土砂供給の状況に規定されることがわかりました。

さらに、こうした洪水土砂氾濫現象においては、構造物周辺に大量の流木が集積することによって被害が拡大する傾向にあります。そのため、昨年度から流域スケールでの豪雨時に発生する崩壊・土石流とともに流出する流木の生産・輸送過程を評価する手法を確立するために、水路実験を実施しました（写真 1 参照）。本年度は、構造物等への流木集積を想定し、その上流側における流砂を伴う氾濫現象に関する水理実験を実施し、流木の影響を含めた洪水土砂氾濫の解析手法の改善を進めていく

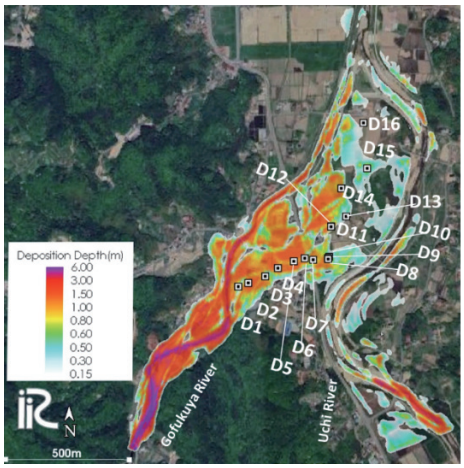
予定です。最終的に、洪水土砂氾濫ハザードマップの作成に資するツールとしての実用化を目指しています。

なお、現在、RSR モデルの GUI 整備の一環として、iRIC ソフトウェア上に「RRI on iRIC」というソルバーとして RSR モデルおよびマニュアルを公開しています（https://i-ric.org/solvers/rri-on-iric/）。今後は、世界中の流域における様々な土砂問題の解決に活用されることを期待しています。

(Gofukuya River), leading to rapid bed aggradation. This triggered the braided channel formation accompanied by a widespread deposition of fine sediment.

Figure 4 presents the hydrographs of sediment and floodwater inflows into the domain area of two-dimensional flow and sediment transport simulation shown in Figure 2, as predicted by the RSR model. The results showed that the peak of sediment flows preceded the peak of flood flow, which is defined by the conditions of sediment supply from the landslide and debris flow in the upstream mountainous area.

Additionally, in such water and sediment inundation disasters, the magnitude of the hazard is often exacerbated by the accumulation of large quantities of driftwood around structures. Therefore, last year, we conducted flume experiments to establish a method for evaluating driftwood production and transport associated with rainfall-induced landslides and debris flows at the basin scale (Photo 1). This year, we are going to conduct flume experiments to investigate the influence of driftwood accumulation on the behavior of water and sediment flows in the upstream side of a driftwood jam, to enhance the reliability and accuracy of the method employed for the water and sediment inundation process prediction. Ultimately, we aim to develop the RSR model into a practical tool for creating hazard maps of waterand sediment inundations.



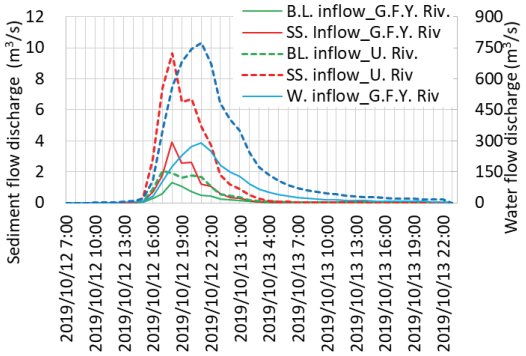


Figure 4 Hydrographs of the inflows of flood and sediment flow to the plain area (Figure 3) predicted by RSR-model

図 4　RSR モデルが予測した平野部（Figure 3）に流入する洪水と土砂流のハイドログラフ

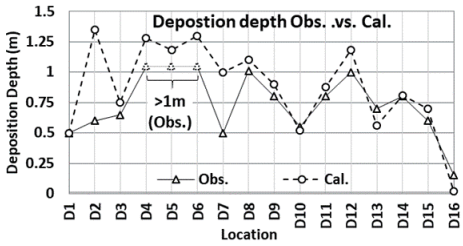


Figure 3 Comparison of deposition depth and distribution of inundated sediment between calculation and observation

図 3　氾濫土砂の堆積深・分布の計算結果と観測値との比較

Photo1 The flume experiment to investigate the behavior of driftwoods in flows over sand waves and sand bars

写真 1　砂州・河床波上の流れにおける流木の挙動に関する水路実験

Since April 2025, the RSR model has been publicly available as a solver named “RRI on iRIC” through the iRIC software (https://i-ric.org/solvers/rri-on-iric/). Equipped with a graphical user interface and user manuals, the model is expected to contribute to water-sediment hazard analysis and basin-scale sediment management in various watersheds around the world.

Reference

*1 Menglu QIN, Daisuke HARADA and Shinji EGASHIRA: Prediction of Sediment Transport Process in River Basin Focusing on the Effect of Hillslope Erosion, Japanese Journal of JSCE, Volume 80 (2024) Issue 16, Article ID: 23-16088.DOI: https://doi.org/10.2208/jscejj.23-16088

*2 Qin, M., Harada, D., and Egashira S.: Modeling of Water-Sediment Inundation Process Incorporating with a Rainfall-Sediment Runoff model, Proceedings of the 24th IAHR-APD Congress 14-17 October 2024, Wuhan, China

SIP program activity report: Outreach and educational activities in Japan using the Virtual Flood Experience System
SIP 活動報告 ～仮想洪水体験システムを用いたアウトリーチおよび教育活動を日本各地で開催～

ICHARM is participating in the Cross-ministerial Strategic Innovation Promotion Program (SIP) the 3rd period, "Development of a Resilient Smart Network System against Natural Disasters," which is a 5-year project starting in September 2023 and funded by the Cabinet Office of Japan. ICHARM mainly contributes to the second theme by developing and implementing technologies that enable quantitative assessments of water-related disaster risks to which companies might be exposed and risks that can be reduced through preventative measures. ICHARM also explores practical approaches to help people understand water-related disasters as personal concerns and encourage voluntary risk reduction actions, such as early evacuation, by providing an opportunity to experience simulated flood situations using virtual reality technology.

The following is a report on its recent activities.

Participation in the Joso City Flood Response Drill

On April 26, 2025, ICHARM researchers participated in the Kinugawa River Flood Response Drill held at the Joso City Hall in Ibaraki Prefecture. In collaboration with the River Information Center, they set up an exhibition booth showcasing the Virtual Flood Experience System. For this exhibition, the staff recreated the streetscape from Mitsukaido Station to Mitsukaido First High School in a virtual environment, letting drill participants and visitors practice evacuation under simulated flood conditions.

Participants commented: "Seeing different scores every time I chose a different route motivated me to keep practicing and finding something new," and "The system made me think about planning a better route on my own."

Visitors trying out the Virtual Flood Experience System
仮想洪水体験の様子

A showcase event at the Chubetsu River Flood Drill in Hokkaido

On May 31, 2025, ICHARM co-hosted an SIP exhibit with Hokkaido University at the 2025 Ishikari River System Chubetsu River Comprehensive Flood Drill in Asahikawa City, Hokkaido, Japan. ICHARM staff set up an exhibition booth, with support from Hokkaido University students, to showcase a virtual flood experience system that lets users experience evacuation during a flood in a digital model of Asahikawa's streetscape.

About 40 visitors tried the system, following a virtual evacuation route from Tokiwa Park by the Ishikari River to Asahikawa Station. Participants commented: "It was terrifying to see water rising all around," "Being in a simulated streetscape, I found the flooding felt more real," and "It really helped me grasp the sense of elevation." The joint team also received feedback on improvements: "The flooding didn't feel quite realistic," and "It's hard to know where you are unless you are familiar with the area."

ICHARM では、「戦略的イノベーション創造プログラム（Cross-ministerial Strategic Innovation Promotion Program：SIP）」第 3 期に位置付けられた課題「スマート防災ネットワークの構築」を構成するサブ課題の一つである「リスク情報による防災行動の促進」に共同研究機関として参加しています。ICHARM は主として研究開発テーマ 2)「水災害リスク・被害影響可視化技術の開発」において、将来にわたって直面する水災害リスクや、事前の防災対策によって軽減されるリスクを企業等が定量的に評価するシステム（水災害リスク・レジリエンス評価支援基盤システム）や、仮想洪水体験システムを用いて住民の水災害に対する経験値を上げる技術の開発および実装を通して、水災害が「ジブンゴト」として捉えられ、事前の防災行動が促進される社会づくりに取り組んでいます。

以下、最近の活動について報告します。

常総市水防演習への参加

2025 年 4 月 26 日、茨城県常総市役所で開催された「鬼怒川洪水対応演習」において、河川情報センターと共同で展示ブースを設置し、仮想洪水体験システムの体験展示を実施しました。今回は、水海道駅前から水海道第一高校までの街並みを仮想空間上に再現し、演習参加者や見学者の方々に避難行動をご体験いただきました。

体験者からは、「避難経路によってスコアが変化することで、反復的な学びにつながる」「自分自身でより良い避難ルートを考えるきっかけになった」といった意見が寄せられました。

北海道忠別川水防演習での体験展示

2025 年 5 月 31 日、北海道旭川市で開催された「令和 7 年度石狩川水系忠別川総合水防演習」において、北海道大学と共同で SIP ブースを出展しました。会場では、旭川市内の地形を再現した仮想空間を用いた、洪水発生時の避難を疑似体験できるシステムを展示し、北海道大学の学生にも運営をご支援いただきました。

体験内容は、石狩川に近接する常磐公園から旭川駅前までの避難ルートを想定したもので、約 40 名の来場者が体験しました。体験者からは、「水が一面から上がってくる様子が怖かった」「自分の住む町をシミュレーションで見ると、より（洪水が）リアルに感じた」「標高の感覚がつ

かめたのが大きい」といった意見が寄せられました。一方で、「浸水の臨場感がやや弱い」「土地勘がないとわかりにくい」といった改善点に関するコメントも得られました。

At the SIP exhibit: the SIP booth (left) and visitors trying the Virtual Flood Experience System (right)
（写真左）SIP ブース全景 （写真右）仮想洪水体験の様子

SIP シンポジウムでの体験展示

2025 年 6 月 9 日、東京都中央区の TODA HALL & CONFERENCE TOKYO で開催された「SIP スマート防災ネットワークシンポジウム 2025」（主催：内閣府・防災科学技術研究所）において、仮想洪水体験システムを体験型展示として出展しました。傳田正利主任研究員と山下大輝研究員が展示対応を行いました。

今回は、鬼怒川と小貝川に挟まれた常総市内を想定し、市街地での仮想避難体験を実施しました。来場した幅広い年代の方々にご体験いただき、特に教育関係者からは「学校現場での防災教育に活用したい」といった前向きなご意見をいただきました。

Interactive exhibit at a SIP symposium

On June 9, 2025, at TODA HALL & CONFERENCE TOKYO in Chuo Ward, Tokyo, ICHARM presented a virtual flood experience system in an interactive booth at the SIP Smart Disaster-Prevention Network Symposium 2025, hosted by the Cabinet Office and the National Research Institute for Earth Science and Disaster Resilience. Senior Researcher Denda Masatoshi and Researcher Yamashita Daiki participated in the event to provide visitors with a virtual flood experience.

For this exhibition, the system reproduced Joso City, a local city in Ibaraki Prefecture located between the Kinu and Kokai rivers, to let visitors practice evacuating a flooded downtown area. This unique technology attracted visitors of all ages. In particular, some educators remarked on its potential as a useful tool for disaster education in schools.

ICHARM staff showing visitors how the Virtual Flood Experience System works at the SIP symposium
（写真左）傳田主任研究員、山下研究員による説明の様子 （写真右）仮想洪水体験の様子

長野県松本市菅野中学校での取り組み

ICHARM は、長野県松本市立菅野中学校において、仮想洪水体験システムを活用した水防災教育を、「総合的な学習の時間」で実施しています。講義と実習を組み合わせた全 8 回のプログラムで構成されており、2025 年 6 月 26 日時点で第 5 講までが終了しています。本取り組みでは、単に防災知識を教えることにとどまらず、生徒が暮らす地域の「地形」「自然」「歴史」と防災を関連付けながら、災害を自分自身の問題として捉える力を育むことを重視しています。

5 月 20 日に実施した第 2 講では、仮想洪水体験システム（Unity 版）を用いて、「松本駅前で洪水が発生

Disaster education at Sugano Junior High School in Matsumoto, Nagano

ICHARM has been assisting Sugano Junior High School in Matsumoto City, Nagano Prefecture, with flood disaster education using the Virtual Flood Experience System as part of its “Integrated Studies” curriculum. The program combines lectures and hands-on sessions over eight classes; as of June 26, 2025, five sessions have been completed. This initiative isn’t simply meant to provide knowledge on reducing disaster risks; it aims to strengthen students’ ability to link their community’s topography, natural features, and history to disaster management and to foster a personal awareness of disasters.

In Session 2 on May 20, students used the Unity-based Virtual Flood Experience System to practice a virtual evacuation, focusing on how they should evacuate in case of flooding at Matsumoto Station. The virtual environment created for this practice was built on data from the Ministry of Land, Infrastructure, Transport and Tourism’s 3D city model, PLATEAU. During the exercise, students familiar with the

streetscape around the station were able to grasp spatial relationships more easily. Others encountering the scene for the first time struggled to pinpoint locations but gradually oriented themselves by referring to supplementary information, such as building and street name labels. These observations suggest that while the use of PLATEAU-based virtual spaces offers certain benefits, their effectiveness depends on information density and viewpoint settings, highlighting the need for well-designed supplementary cues.

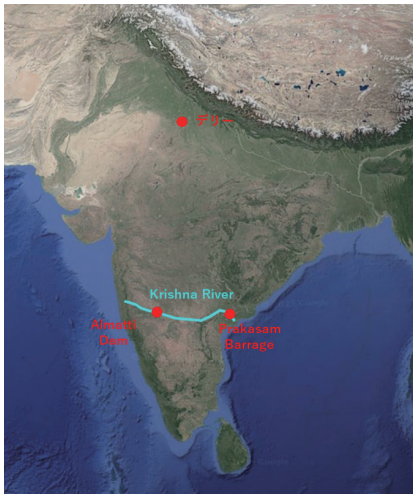
At Sugano Junior High School: a session in progress (left) and the PLATEAU-based townscape using the Unity-driven Virtual Flood Experience System (right)
授業の様子（左写真）と PLATEAU をもとに構築した Unity 版仮想洪水体験システム（右写真）

したらどう避難するか」をテーマに仮想避難訓練を行いました。この仮想空間は、国土交通省が整備する 3D 都市モデル「PLATEAU」のデータを基に構築されています。体験中には、駅前の景観に日常的に接している生徒ほど、仮想空間においても位置関係を比較的容易に把握する様子が見られました。一方で、初見では場所の特定が難しい生徒も一定数おり、そうした場合には、建物や通りに付された名称ラベルなどの補助情報を参照することで、徐々に空間の把握に至る傾向が確認されました。このことから、PLATEAU を基盤とした仮想空間の活用は一定の有効性を示す一方で、人間の景観認識に対しては情報量や視点設定の面で課題もあり、補助的な情報提示の工夫が重要であることが示唆されました。

(Written by KURIBAYASHI Daisuke, DENDA Masatoshi and YAMASHITA Daiki)

Field visit and discussions with organizations for the World Bank India Project
世界銀行インドプロジェクトの現地調査及び関係機関との協議

Executive Director KOIKE Toshio, Chief Researcher OKADA Tomoyuki, and Senior Researchers USHIYAMA Tomoki, Mohammed Rasmy, and TAKEGAWA Shinya visited India for a field survey and discussions with relevant organizations involved in the World Bank India Project on May 12-16, 2025. This survey was part of the "Technical Support for Advanced Forecast of Rainfall and Reservoir Inflow for Optimized Reservoir Operation," a project commissioned by the World Bank. The purpose of the survey was to understand the challenges of dam operation in the Krishna River basin, which extends across the Indian states of Karnataka and Andhra Pradesh, and identify the requirements for flood control, as well as collect local disaster records, observation data, and other information necessary for conducting various analyses. In addition to ICHARM, the Japan Water Agency (JWA) and the World Bank participated in the survey and meetings.



The map of India (from Google Earth)
インドの地図（Google Earth より）

小池俊雄センター長、岡田智幸上席研究員、牛山朋來主任研究員、モハメッド・ラスミー主任研究員、武川晋也主任研究員が 2025 年 5 月 12 日から 16 日にかけて、世界銀行インドプロジェクトの現地調査及び関係機関との協議に参加しました。本調査は、世界銀行からの委託業務である「貯水池運用の最適化のための降雨量と貯水池流入量の高度予測に関する技術支援」の一環です。インドのカルナータカ州及びアンドラ・プラデシュ州を流れるクリシュナ川流域のダムの操作の課題や洪水防御の要望を把握することと、解析に必要な現地の災害記録情報や観測データ等を収集することを目的として実施されました。ICHARM の他に水資源機構及び世界銀行の職員も参加しました。

【5 月 12 日（月）】

カルナータカ州水資源部との打合せの中で、クリシュナ川流域の概要やダム操作の課題などに関する説明がありました。州政府からは、分野間協力、気候変動適応、本支川バランスなどを含む流域管理計画の体制づくりを目指して、ダム貯水池操作モデル、多目的ニーズに対応できる操作規則、観測雨量からダム流入予測の安定的利用等のニーズが示されました。

【5 月 13 日（火）】

カルナータカ州の Almatti Dam の概要や過去の洪水時の操作などに

ついての説明を受けた後、Almatti Dam の現場を視察しました。説明時に示された操作事例は、上流の数地点での流量データを基にダム流入量を推定し、Almatti Dam の貯留量を基に、ダムからの事前放流を実施するものでした。

【5 月 14 日（水）】

12 ～ 13 日の協議、視察を踏まえ、カルナータカ州の ACIWRM (Advanced Centre for Integrated Water Resources Management) との打合せにて、小池センター長が「Water-related Disaster Resilience and Sustainability」と題する発表を行いました。説明では、気象予測の高度化の基本、洪水から渇水までをシームレスにつなぐ情報システム、洪水と水利用の両方の最適化を実現するダム操作など、同州のニーズに即した ICHARM の研究開発成果が示され、共同開発へ向けた環境が整いました。

【5 月 15 日（木）】

アンドラ・プラデシュ州の Prakasam Barrage を視察した後、アンドラ・プラデシュ州水資源部との打合せを行いました。

2024 年の洪水時に、同州で甚大な都市浸水被害が生じたことに鑑み、小池センター長の講演では日本の都市水害の経緯、総合治水並びに流域治水における貯留、放水路の実績についても紹介がありました。2019 年のモンスーンによる上流域の豪雨に加え、温暖化による局所的豪雨の頻度が高まっており、ダム、堰の連携システムの最適操作と、流域対策の必要性を共有することができました。

【5 月 16 日（金）】

世界銀行の実務者レベルと、クリシュナ川流域のカルナータカ州及びアンドラ・プラデシュ州内のダム・堰の最適操作に向けた日印合同研究の体制構築とスケジュールについて協議しました。その後、水 省（MoJS, Ministry of Jal Shakti）Debashree Mukherjee 長官と中央水委員会（Central Water Commission, CWC）Shri Atul Jain 委員長により、ICHARM と水資源機構が協力して、インドのダム操作の改善を目指す、世界銀行プロジェクトの実施が決定されました。

今回の現地調査と関係機関との議論を通じて、水災害軽減に向けて ICHARM の知見の普及を図るとともに、プロジェクトの構想が合意できました。ICHARM は本プロジェクトへの参加を通じて、今後もインドの水災害被害の軽減に貢献していく予定です。

[May 12]

The ICHARM researchers attended a meeting with the Karnataka State Water Resources Department and the state government, along with other project participants. The department provided an overview of the Krishna River Basin and the challenges of dam operation. The state government presented its needs, such as developing dam reservoir operation models, establishing operating rules that can meet multi-purposes, and achieving stable use of dam inflow forecasts from observed rainfall, ultimately aiming to create a basin management planning system that includes inter-sectoral cooperation, climate change adaptation, and main and secondary river balance.

[May 13]

The visiting team received a briefing on the Almatti Dam in Karnataka State and dam operation during past floods. Local dam operators explained that they estimated dam inflow based on flow data at several upstream locations and pre-released stored water from the dam, considering its storage capacity. After the briefing, the participants visited the dam site.

[May 14]

Based on the discussions and the field visit on May 12-13, Executive Director Koike gave a presentation titled "Water-Related Disaster Resilience and Sustainability" at a meeting with the Advanced Centre for Integrated Water Resources Management (ACIWRM) in Karnataka State. In the presentation, the executive director explained ICHARM's research and development achievements that meet the state's needs, including the basics of advanced weather forecasting, an information system that seamlessly links flooding to drought, and dam operations that optimize both flooding and water use. All these interactions contributed to preparing an environment for an joint development project.

[May 15]

The visiting team took a tour of the Prakasam Barrage in Andhra Pradesh State and then had a meeting with its Department of Water Resources. In view of the state's severe urban flood damage during the 2024 flood, Koike gave a presentation on urban flooding in Japan and the effectiveness of reservoirs and spillways in integrated flood control and basin-wide flood control. Also considering the intense 2019 monsoon rains in the upper river reaches and an increase in localized downpours

Meeting with the Karnataka Water Resource Department
ルナータカ州水資源部との打合せ風景

Field visit to the Almatti Dam
Almatti dam の視察

Field visit to the Prakasam Barrage
Prakasam Barrage の視察

Meeting with the Andhra Pradesh Water Reseource Department
アンドラ・プラデシュ州との打合せ風景

due to global warming, the participants acknowledged the need to optimize coordinated dam-and-weir operations and implement basin-wide flood-control measures.

[May 16]

The team discussed an organizational structure and schedule for the India-Japan joint study for the optimal operation of dams and weirs within the Karnataka and Andhra Pradesh states of the Krishna River basin with the working-level staff of the World Bank. Subsequently, the Secretary of the Ministry of Water (MoJS, Ministry of Jal Shakti) Debashree Mukherjee and the Chairperson of the Central Water Commission (CWC) Shri Atul Jain decided to implement a World Bank project, in collaboration with ICHARM and JWA, to improve dam operations in India.

Through this field visit and discussions with related organizations, ICHARM was able to reached an agreement on the concept of the project, as well as disseminate its knowledge on water-related disaster mitigation. ICHARM will continue to contribute to the reduction of water-related disasters in India through this new joint project.

(Written by TAKEGAWA Shinya)

A business trip to the Philippines for the HyDEPP-SATREPS Project
フィリピン HyDEPP-SATREPS プロジェクト出張報告

On June 16-21, 2025, Research Specialists Ralph Acierto, QIN Menglu, NAGUMO Naoko, and Research Assistant Jonathan Serrano visited the Philippines as part of a research project entitled "Development of a Hybrid Water-Related Disaster Risk Assessment Technology for Sustainable Local Economic Development Policy under Climate Change (HyDepp-SATREPS)." This project, led by Principal Investigator Miho Ohara, a professor at the University of Tokyo, is conducted under the Science and Technology Research Partnership for Sustainable Development (SATREPS), a joint initiative of the Japan International Cooperation Agency (JICA) and the Japan Science and Technology Agency (JST).

On June 16, the ICHARM researchers conducted a field survey of the Santa Maria and Pagsanjan Rivers, which flow into Laguna Lake, with students from the University of the Philippines Los Baños, a project counterpart (Photo 1). On June 18, they held a training session on groundwater flow and aquifer observation using a digital resistivity meter (Photo 2), one of the devices donated to the university. This training consisted of both lectures and hands-on exercises on operating the equipment, and a preliminary online session was also provided before the training. Upon completion of these training sessions, certificates were given to 34 participants, including students and researchers from the University of the Philippines Los Baños, as well as officers from the Laguna Lake Development Authority, a cooperative organization of the project. Furthermore, on June 19, the ICHARM researchers visited the University of the Philippines Diliman, another project counterpart, and had discussions with Associate Professor Eugene Herrera regarding the results of climate modeling and hydrological simulations and methods for flood risk assessment. They also received valuable advice on the management of the equipment during observations and the selection of appropriate locations in terms of lake turbidity measurement, which had been discussed among the parties involved (Photo 3).

At the 8th Joint Coordinating Committee (JCC) held on June 20, the ICHARM researchers reported the progress of the research and had discussions with Philippine counterparts and JICA representatives (Photo 4). The committee agreed that the next JCC will be held in mid-November or early-December, and that all project participants will collaborate closely in the preparation of the project's final report. Although the remaining research period is now limited, ICHARM will continue to work in close cooperation with members on the Philippine side to achieve the project's goals.

国際協力機構（JICA）および科学技術振興機構（JST）の SATREPS 事業（地球規模課題対応国際科学技術プログラム）として進めている研究プロジェクト「気候変動下での持続的な地域経済発展への政策立案のためのハイブリッド型水災害リスク評価の活用（研究代表者：大原美保東京大学教授、プロジェクト略称：HyDEPP-SATREPS）」の活動の一環として、Ralph Acierto 専門研究員、秦梦露専門研究員、南雲直子専門研究員と、ジョナサン・セラーノリサーチアシスタントが、2025 年 6 月 16 日から 21 日にフィリピンに出張しました。

6 月 16 日には、プロジェクトのカウンターパートであるフィリピン大学ロスバニョス校の学生らとともに、ラグナ湖に流入するサンタマリア川およびパグサンハン川の流路や河床材料の調査を行いました（写真 1）。また、6 月 18 日には、同大学に供与した電気探査装置を用いて、地下水の流動や帯水層の観測に関する研修を行いました（写真 2）。この研修は、座学と装置取り扱い実習から構成され、事前のオンライン研修も行いました。両研修を修了したフィリピン大学ロスバニョス校の学生と研究者、ならびにカウンターパートのラグナ湖開発公社の行政官 34 名には修了証が授与されました。さらに、6 月 19 日には、同じくプロジェクトのカウンターパートであるフィリピン大学ディリマン校を訪問し、Eugene Herrera 准教授とラグナ湖流域の気候モデリングや水文シミュレーションの結果、洪水リスク評価手法について意見交換を行いました。また、検討を進めてきた湖の濁度計測について、観測時の機器の管理方法や、設置場所について助言を得ることができました（写真 3）。

6 月 20 日に開催された第 8 回合同調整委員会では、研究進捗を報告するとともに、フィリピン側メンバーや JICA 等の関係者と意見交換を行いました（写真 4）。次回の合同調整委員会を 11 月中旬または 12 月上旬に行うこと、プロジェクト最終報告書の作成について協力しながら進めていくこと等について合意しました。残された研究期間はわずかとなりましたが、ICHARM では、フィリピン側メンバーと協力しながら、プロジェクトの目標達成に向けて研究に取り組んでいきます。

Photo 1 Field survey along the Pagsanjan River.
写真 1　パグサンハン川調査の様子

Photo 2 A scene from the training on the groundwater measurement
写真 2　地下水観測研修の様子

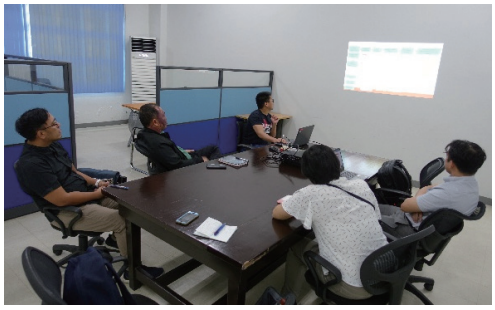


Photo 3 Meeting with the members of University of the Philippines, Diliman
写真 3　フィリピン大学ディリマン校のメンバーとの打合せの様子

Photo 4 Group photo in the Joint Coordination Committee
写真 4　合同調整委員会の集合写真

(Written by NAGUMO Naoko)

Training & Education

https://facebook.com/icharmtrainingcourse/

Educational program updates
教育・研修活動報告

5 月 17 日　利根川水系連合・総合水防演習視察

5 月 17 日、修士学生は栃木県宇都宮市の利根川河川敷で行われた第 73 回利根川水系連合・総合水防演習に参加しました。本演習への参加に先立ち本演習の解説者でもある清水義彦研究・研修指導監から水防演習について座学で学んでいた学生たちは、水防団や地域住民、栃木県、宇都宮市、国土交通省、自衛隊、赤十字社など多くの関係者が参加して行われた演習訓練を視察、体験し、多くを学びました。

May 17: Participation in the Tone River Basin Joint Comprehensive Flood Fighting Drill

On May 17, master's students participated in the 73rd Tone River Basin Joint Comprehensive Flood Fighting Drill, held in the floodplain of the Tone River in Utsunomiya City, Tochigi Prefecture. Beforehand, they received classroom instruction on flood fighting drills from Research and Training Advisor SHIMIZU Yoshihiko, who was also an evaluator for this flood fighting drill. They then observed and took part in the drill alongside many other participants, including local residents, flood fighting corps, and personnel from Tochigi Prefecture, Utsunomiya City, the Ministry of Land, Infrastructure, Transport and Tourism, the Self-Defense Forces, and the Red Cross Society. They learned a great deal about how Japan prepares for flood disasters at the local level.

At the floodplain of the Tone River
栃木県宇都宮市利根川河川敷にて

(Written by FUJIKANE Masakazu)

May 21-23: Visit to the Shinano River basin and the Yamba Dam

All seven master's students and two first-year doctoral students participated in this three-day on-site visit, which was conducted as part of the master's program. First, the students observed the Shinano River, the longest in Japan, from its lower reach to the upper erosion control area. On the morning of May 21, they visited the Shinano River Downstream River Office of the Ministry of Land, Infrastructure, Transport and Tourism (MLIT) in Niigata City, Niigata Prefecture. The office staff explained how the topographical characteristics of the lower Shinano River make water drainage challenging. They also discussed river improvement projects conducted during the Meiji era (1868-1912), such as the construction of the Okozu and Sekiya diversion channels, and how these projects have contributed to Niigata City's development into the largest city on the Sea of Japan side. The students also learned about the effectiveness of comprehensive river improvement works implemented after the severe disaster caused by heavy rains over Niigata and Fukushima Prefectures in 2004. These measures, carefully balanced between the upper and lower reaches, greatly reduced damage due to heavy rains in July 2011.

In the afternoon, the students visited the Shinano River Okozu Museum in Tsubame City, Niigata Prefecture, where they received an explanation from museum staff about the history and role of the Okozu Diversion Channel. They learned that the low-lying Echigo Plain was once prone to prolonged flooding, resulting in muddy fields and low productivity. However, thanks to the diversion channel, the plain has been transformed into fertile land and is now known as Japan's number one rice-producing area. The students then moved to the Nitokomieru Museum in Teradomari, Nagaoka City, Niigata Prefecture, where MLIT Shinano River Office staff explained the current Okozu Diversion Channel Improvement Project, which involves excavating the mountainous area to widen the river.

On May 22, the group visited the Yamakoshi Reconstruction Exchange Center "Orataru", located in the former Yamakoshi Village Hall in Nagaoka City, where MLIT Yuzawa Erosion Control Office staff lectured on the damage caused by the 2004 Chuetsu earthquake and the subsequent restoration and reconstruction efforts. They were then guided to a part of the village by the Imo River, where a natural dam formed due to the earthquake. There, they saw an erosion control dam and a sediment trap, as well as houses once submerged by the natural dam. These houses have been preserved as relics of the earthquake disaster and now serve as an inspiration to the village's reconstruction efforts. They also visited the Daigenta River Erosion Control Dam in Yuzawa Town and reconfirmed the importance of erosion control. Because of the long-term, steady erosion control project, including dam construction, the town has developed not only as a winter ski resort but also as a summer resort.

At the Shinano River Okozu Museum
大河津資料館にて

At the Shinano River Downstream River Office
信濃川下流河川事務所にて講義

At a sediment trap along the Imo River in the Ryuko district
芋川竜光遊砂地にて

5 月 21 日～ 23 日　信濃川流域及び八ッ場ダム視察

修士プログラムの一環で行われた今回の 3 日間の現地視察には 7 名の修士学生全員及び 2 名の博士課程 1 年生が参加し、まずは日本一の流路延長を誇る信濃川について、下流から上流砂防域までを視察しました。

1 日目の 5 月 21 日午前は、新潟市にある国土交通省信濃川下流河川事務所を訪問しました。事務所の職員から信濃川下流部の排水が難しい地形特性と明治時代からの大河津分水路や関屋分水路などの河川改修事業の結果、新潟市が現在日本海側最大の都市に発展することに寄与してきたこと、また、2004 年の新潟・福島豪雨での大災害をうけて上下流バランスに配慮しながら実施した総合的な河川改修事業により、2011 年 7 月豪雨では発生した被害を大きく低減することができたことの説明を受けました。

また午後は、燕市にある信濃川大河津資料館を訪れ、資料館の職員から、大河津分水路の歴史と役割について説明を受け、泥田が多く低平地で浸水も長引き生産性が低かった越後平野が、大河津分水路によって日本一の穀倉地帯と言われる豊かな土地となったことを学びました。さらに、長岡市寺泊にある「にとこみえ～る館」に移動し、国土交通省信濃川河川事務所の職員から山地部を掘削して川幅を広げる現在の大河津分水路改修事業について説明を受けました。

2 日目の 5 月 22 日は、長岡市の旧山古志村役場にある「やまこし復興交流館 おらたる」を訪問し、国土交通省湯沢砂防事務所の職員から 2004 年中越地震での被害と復旧・復興について説明を受けるとともに、芋川において天然ダムが発生した箇所などを案内していただき、整備された砂防ダムや遊砂池などの施設を見学しさらに、天然ダムにより埋まった家屋を震災遺構として残し、村の復興に役立てていることなどを学びました。また、大源太川第 1 号砂防堰堤を訪問し、長年の地道な砂防事業が、湯沢町が冬のスキーリゾート地としての発展だけでなく、夏のリゾート地としての発展にも寄与していることを学び、砂防事業の重要性を認識しました。

3 日目の 5 月 23 日は、群馬県の八ッ場ダム管理支所を訪れました。初めに利根川ダム統合管理事務所の職員よりダムの歴史や建設、地域の人々にとっての重要性についてレクチャーを受けました。その後、八ッ場ダム堤頂部と堤体の内部及び下部を見学し、ダムの構造を間近で見る機会を得ました。学生たちは、八ッ場ダム事業が完成までにたどってきた 50 年以上もの長い道のりを学び、大型公共事業について地元と事業者、地元内部など様々な局面での理解やコンセンサスを得る必要性と、そのための科学的知見の重要性を再認識していました。

On May 23, the group visited the Yamba Dam Management Branch Office in Gunma Prefecture. First, they received a lecture from staff of the Tone River Dam Integrated Management Office on the dam's history, construction, and importance to local communities. Afterwards, the students had the opportunity to take a close look at the dam's structure from crest to foundation, including its interior. They learned how the Yamba Dam project unfolded over more than 50 years. That long, complex process served a powerful reminder that large-scale public projects require understanding and consensus among local communities, project operators, and other stakeholders and that scientific knowledge is expected to play a central role to meet this requirement.

At the Yamba Dam
八ッ場ダム

(Written by FUJIKANE Masakazu)

The 4th ICHARM Alumni Webinar on Hydrology
ICHARM 第 4 回 Alumni Webinar（水文）

ICHARM Alumni Webinar は、2024 年 9 月 2 日 に ICHARM 第 1 回 Alumni Webinar を気象分野で開催したのを皮切りにスタートした ICHARM の新たな取組です。このウェビナーは水災害管理に関する最新の動向や技術革新に関する知識と情報を共有し、交流を深めることで卒業生と在校生のネットワークを強化し、ICHARM 卒業生の活動を支援することを目的にオンライン開催するもので、今年度から、気象・土砂・水文・DRR（災害リスク軽減）の 4 分野別に年 4 回開催する予定です。

第 4 回は、2025 年 5 月 27 日午後 3 時～ 5 時 00 分、土木研究所 ICHARM 講堂で開催され、卒業生、現役学生、ICHARM 関係者のみならず、GRIPS、JICA、ICHARM の OB など合計 80 人に参加していただきました。ウェビナーでは、水文分野について ICHARM と卒業生が最新の研究や社会実装状況に関して発表、そ

The ICHARM Alumni Webinar is a new initiative launched by the institute in 2024. This online event aims to strengthen networking between former and current students of ICHARM's educational programs and, through these interactions, support them in their professional duties by sharing knowledge and insights on the latest trends and innovations in water-related disaster management. Each quarterly webinar focuses on one of the four key areas: meteorology, sedimentology, hydrology, and disaster risk reduction.

The fourth alumni webinar on hydrology was held on May 27, 2025, from 3:00 pm to 5:00 pm at the ICHARM Auditorium. It was attended by approximately 80 people, including alumni, current students, and both past and present members of ICHARM, GRIPS, and JICA. During the webinar, ICHARM and alumni presented their latest research and its social implementation in the field of hydrology. They also shared information and exchanged opinions about other developments, research, and projects.

Newly appointed Research and Training Advisor SHIMIZU Yoshihiko gave an opening address, in which he introduced his research career and potential research fields at ICHARM. This was followed by presentations from four alumni and a doctoral student currently enrolled at ICHARM.

The following information covers the speakers and their presentations. In the parentheses, the years indicate the speakers' enrollment years, and the abbreviations indicate their enrollment programs: DMP refers to the master's program, Water-related Disaster Management Course of Disaster Management Policy Program, while DM refers to the doctoral program, Disaster Management Program.

1	Dr. Asif Naseer (DM, 2015-2018), Pakistan
	National Researcher, Water Resource Management, International Water Management Institute (IWMI)
	Application of Pywr Model for Water Resource Allocation Indus River Basin
2	Dr. Md. Khairul Islam (DMP, 2014), Bangladesh
	Superintending Engineer (Civil), Bangladesh Water Development Board
	Current work and research activities at Bangladesh Water Development Board
3	Dr. Sanjeewa Illangasingha (DM, 2021-2024), Sri Lanka
	Director, Mahawali Authority, Sri Lanka
	Disaster Risk Reduction (Water Related) Application in Sri Lanka (Mahaweli Authority of Sri Lanka)
4	Mr. Akshay Kowlesser (DMP, 2021), Mauritius
	Ph.D. student at Université Gustave-Eiffel, France
	Challenges of surface water flood forecasts -A Hybrid Approach-Catalogue of Scenarios
5	Ms. Thilini Kaushalya, (DMP 2023-), Sri Lanka
	Ph.D. student at ICHARM / GRIPS
	Sustainable Adaptation to Climate Change: Enhancing Hydro-meteorological Disaster Resilience in Mahaweli Basin, Sri Lanka through Optimized Dam Operations and the Climate-Water-Energy-Food Nexus Framework

Senior Researcher Abdul Wahid Mohamed RASMY, the moderator of this event, then gave a presentation on the latest hydrology research at ICHARM, entitled "A Seamless Modeling Approach for Water-Related Disaster Risk Management: Progress, Challenges, and Future Directions."

Following the presentations, the participants engaged in active discussions on various topics, such as the role of science in local areas where rapid decision-making is required; how hydrology can earn public trust and support consensus building; and how to determine appropriate investment in specific measures. Finally, Executive Director KOIKE Toshio delivered a closing speech, highlighting the application of basic research and new technology to decision-making processes.

Online participants and ICHARM staff
第四回 Alumni Webinar 参加状況

(Written by FUJIKANE Masakazu)

の後開発状況や最新情報を共有して意見交換を行いました。

冒頭、清水義彦研究・研修指導監から開会のあいさつをいただきました。

その後、卒業生側から表の５名（うち１名は現在 ICHARM 博士課程在学中）から発表がありました。

その後、ICHARM 側からの発表として、今回のモデレータであるモハメッド・ラスミー先生から、「A Seamless Modeling Approach for Water-Related Disaster Risk Management Progress, Challenges, and Future Direction」と題して、ICHARM の水文分野の最新の研究の紹介がありました。

その後は活発な全体討論があり、例えば、迅速な意思決定が求められる現地における科学の役割や、コンセンサスの醸成に水文学がどう信頼を得て貢献できるか、具体的対策にとって妥当な投資額を決定する際、我々はどう考えるべきか、等貴重な議論が交わされました。

最後に小池俊雄センター長によるまとめのあいさつをいただきました。

Action Reports from ICHARM Graduates

ICHARMでは、政策研究大学院大学（GRIPS）、国際協力機構（JICA）と連携して、世界各国から洪水対策の行政官を対象として、1年間の修士課程「防災政策プログラム　水災害リスクマネジメントコース」を実施するとともに、3年間の博士課程「防災学プログラム」を実施しています。これまで210名を超える実務者・研究者の方々が各課程を修了し、帰国後、本研修で習得された知識や経験を生かして、様々な分野において活躍されています。

ICHARMニュースレターでは、こうした卒業生の方々からご活躍の様子を寄稿していただいています。本号では2021-2024年 博士課程で博士（防災学）の学位を取得したサンジーワ イランガシンガ氏（スリランカ）の寄稿文をご紹介します。

ICHARM provides graduate-level educational programs for foreign government officers in charge of flood risk management in collaboration with GRIPS and JICA: a one-year master's program, "Water-related Risk Management Course of Disaster Management Policy Program," and a three-year doctoral program, "Disaster Management Program."

Since their launches, over 210 practitioners and researchers have completed either of the programs. They have been practicing knowledge and experience acquired through the training in various fields of work after returning to their home countries. This section is devoted to such graduates sharing information about their current assignments and projects with the readers around the globe. Dr. Sanjeewa Illangasingha of Sri Lanka, who earned his Ph.D. in disaster management from 2021 to 2024, has kindly contributed the following article to this issue.

Dr. Sanjeewa Illangasingha

Director – Engineering Design & Planning Division, Mahaweli Authority of Sri Lanka

After completing three years of doctoral research and professional development on Disaster Management in Japan, supported by a long-term training scholarship from the Japan International Cooperation Agency (JICA) under the Sendai Framework for Disaster Risk Reduction (DRR), I returned to Sri Lanka with a renewed commitment to serve my country. This specialized program, focused on building DRR expertise and leadership capacity, was conducted at the International Centre for Water Hazard and Risk Management (ICHARM) in collaboration with the National Graduate Institute for Policy Studies (GRIPS). My Ph.D. in Disaster Management focused on the development of a holistic analysis system to support water resource policy decisions under climate change. The research integrated hydrology, hydrometeorology, climate modeling, disaster management, and water resources planning, with special application to the Mahaweli and adjacent river basins in Sri Lanka. While the study was globally relevant, it was uniquely customized to local conditions, addressing the critical uncertainties in water resource availability under future climate projections.

During my time in Japan, I not only received advanced scientific training but also learned deeply from Japanese society. I was especially influenced by their ethical public service, professional discipline, punctuality, environmental consciousness, and deep respect for community and harmony. These values have become guiding principles in both my personal and professional life, and I am now committed to applying them to strengthen institutional governance at the Mahaweli Authority of Sri Lanka (MASL) and service delivery in Sri Lanka.

Since 2008, I have worked at MASL, which is the largest multidisciplinary development organization in the country. It oversees land and water use, irrigation, agriculture, hydropower generation, and settlement planning across multiple river basins. As a multidisciplinary organization, MASL brings together various sectors in the areas of water, land, agriculture, energy, and business under one umbrella, ensuring coordinated and sustainable development. Its integrated approach has been instrumental in boosting rural livelihoods, strengthening food security, and promoting economic growth. One of the Authority's most significant contributions is its management of over 3,661 million cubic meters of water stored in reservoirs, which supports mainly irrigation and drinking water needs. Additionally, it plays a crucial role in the energy sector by overseeing the production of over 850 MW of hydroelectric power, contributing to the national grid. The extensive canal network, spanning over 10,200 kilometers, ensures that water reaches farmlands efficiently, facilitating agricultural development across more than 150,000 hectares.

Upon returning from Japan, I resumed my duties in the Water Management Secretariat and was immediately engaged in evaluating and supporting several national-level water resources and infrastructure projects. My technical expertise, strengthened through my Ph.D. training, allowed me to provide evidence-based input on water availability and future planning for inter-basin development, drought mitigation, and climate adaptation.

In November 2024, I have been appointed as the Board Secretary of MASL, a role that allows me to contribute, facilitate, and support at the highest decision-making level. In this voluntary capacity, I supported the

coordination of board activities, documentation, and policy evaluation using a scientific lens. I think this appointment was a recognition of my dedication and the value of my international training. Shortly afterward, in December, I have been promoted to the Director of the Engineering Design and Planning Division while concurrently serving as the Board Secretary. These dual roles positioned me among the senior management of MASL, with key responsibilities in overseeing all kinds of civil engineering design and planning. As the Director, I now lead all planning and design activities related to infrastructure development, including water-retaining structures, such as bunds, spillways, and tanks, as well as canal systems, buildings, earth-retaining structures, water supply schemes, river training works, and even architectural designs and mini-hydropower schemes.

Dr. Sanjeewa Illangasingha at his office

I have introduced new standards and procedures based on what I learned in Japan, particularly in the areas of value engineering and climate-resilient design. We now prioritize early stakeholder engagement, cost-efficiency without compromising structural durability, the use of environmentally sustainable materials and approaches, and the integration of modern technologies, such as GEE, GIS, Google Earth, and advanced modeling tools. Additionally, we utilize structural analysis software like PROKON, SAP2000, GEO-SLOPE, and other specialized applications to ensure precision and reliability in civil engineering design works. Design optimization is now standard practice, whether in reducing water loss in canal systems, selecting construction materials, minimizing land acquisition, or balancing irrigation with hydropower/solar generation. I have also taken the initiative to incorporate climate adaptation and safety features into all designs. This includes designing canals and reservoirs to withstand extreme weather events, adding safety barriers, fencing, and pedestrian bridges to reduce accidents, and ensuring proper drainage to prevent water-borne diseases. We also provide method statements that emphasize public and worker safety and promote awareness of the safe operation of irrigation infrastructure.

Beyond my internal duties, I have been appointed to serve as a key technical member of several national-level project review and planning committees. I continue to provide expert consultation to MASL and various ministries, as well as to other institutions, on a voluntary basis for major water-related infrastructure projects. My advisory role leverages insights from my doctoral research and international collaborations to support strategic decision-making. Many of the scientific methods and findings from my Ph.D. research are now actively being used in policy development, especially in formulating integrated strategies for water resources planning and flood and drought mitigation.

One of my key missions has been to strengthen international collaboration, especially with Japan. I have re-established connections with Japanese agencies, such as the Japan Water Agency and the Ministry of Land, Infrastructure, Transport and Tourism (MLIT), and facilitated a high-level technical visit by a Japanese delegation to MASL in late 2024. Together, we explored potential collaboration on flood, drought, and sedimentation management. I am also promoting collaboration with Nagoya University in developing an advanced flow forecasting system and strengthening technical cooperation in water disaster management. Initial discussions are currently underway to enhance technical collaboration with JICA on key potential development initiatives (soft and hard measures). I serve as the focal point and technical coordinator in these efforts. In parallel, I am working and coordinating with the International Consortium on Landslides (ICL) to promote a new project on landslide disaster risk identification and risk reduction planning around the Kotmale Dam. If approved, this project will enhance dam safety and disaster preparedness for one of Sri Lanka's most important hydro infrastructure sites. Beyond my collaboration with Japan, I am actively facilitating technical partnerships with South Korea and the Netherlands to advance multidisciplinary development initiatives within the Mahaweli Area. This includes providing expert guidance to foster knowledge exchange and implement integrated solutions across water management, agriculture, and sustainable infrastructure.

Looking ahead, I have proposed a new initiative titled "Water-Related Disaster Management of the Mahaweli Systems and Promotion of Professional Ethical Conduct at the Mahaweli Authority." This project has three major components. The first is the technical application of the RRI model to simulate and map flood risk zones in System H (Huruluwewa) under various return periods (100-, 200-, and 500-year events). The second focuses on community awareness, with plans to distribute visual tools and conduct field briefings to enhance disaster preparedness among settlers and field officers. The third is the launch of a structured, self-paced online ethics course for MASL staff, aiming to reinforce professional values such as integrity, accountability, and responsibility in public service (based on Japanese exposure). These components are expected to produce scientifically grounded flood hazard maps, improve community engagement in DRR, and strengthen ethical conduct in public administration, thereby making Mahaweli systems safer, more resilient, and more responsive to climate threats

and public trust. The project will be piloted in two systems initially, with subsequent scaling across the Mahaweli region. The formal proposal has been submitted to JICA's Sri Lanka office, with implementation targeted to commence this year with JICA's support or alternatively next year through MASL's resources.

The MASL management, including its Director General, recently conducted a field visit to explore key policy recommendations derived from my Ph.D. research. One of the major proposals under review is the Kelani Diversion, which focuses on inter-basin water sharing to reduce flood risk and enhance drought resilience, thereby contributing to climate change mitigation and sustainable development. Additionally, the management has confirmed the importance of the proposed Randenigala Diversion, involving both within-basin and inter-basin water transfers. This initiative aims to strengthen water security for the Northern and North Central provinces by improving resilience against prolonged droughts and supporting long-term sustainability.

The disaster management program, my training at ICHARM, and my exposure to Japanese practices have had a lasting impact on my technical capacity, leadership role, and commitment to ethical governance. I am grateful for the opportunity and remain dedicated to applying these lessons to support sustainable development, enhance disaster resilience, and build strong ties between Sri Lanka and Japan.

Attending the JICA Alumni meeting with Mr. KURONUMA Kenji , Chief Representative of JICA Sri Lanka, and Ms. IDE Yuri, Senior Representative, where we discussed ongoing collaborations and future partnership opportunities for MASL

With a Japan delegation (MLIT, JWA, and NIPPON KOEI) during a field visit

Ancient Hydraulic Civilization Anuradhapura, Heritage, and Hydrology: Discussing with Associate Professor NAKAMURA Shinichiro of Nagoya University on Sri Lanka's Civil Engineering Legacy

ICHARM officials with its Sri Lankan counterparts

ICHARM officials with the Mahaweli Authority Leadership after discussing on future cooperation

Miscellaneous

Personnel change announcements
人事異動のお知らせ

Leaving ICHARM

- **TANAKA Yozo:** Senior Researcher
  Water Resources Department, Water and Disaster Management Bureau, Ministry of Land, Infrastructure, Transport and Tourism (MLIT)

○**田中　陽三**　主任研究員
国土交通省　水管理・国土保全局　水資源部

Awards / 受賞リスト

* April - June 2025

- *On June 11, ICHARM received the Long-Term Contribution Award from UNESCO in recognition of its longstanding global contributions to research, education, and information networking as a UNESCO Category II Centre since its establishment.*
  6月11日、UNESCOのカテゴリーIIセンターとして設立以来、ICHARMが行ってきた研究・教育・情報ネットワーキング活動の長年の貢献に対し、UNESCO貢献賞が授与されました。
  *See "**Long-Term Contribution Award presented by UNESCO**" on page 3*
  *3ページ「**UNESCO 貢献賞を受賞**」参照*

Business trips / 海外出張リスト

* April - June 2025

- *April 20-26, MIYAMOTO Mamoru, Bangkok, Thailand, to participate in the 81st session of ESCAP and lead a session discussion at the side event and present the IFI Platform's work on water-related disaster resilience*
- *April 22-27, KOIKE Toshio, Dundee, UK, (1) to participate in Governing Board of UNESCO CENTRE FOR WATER LAW, POLICY AND SCIENCE (CWLPS), (2) to participate in CWLPS Annual Symposium 2025 – Positive Water Futures for All*
- *May 11-18, KOIKE Toshio, OKADA Tomoyuki, USHIYAMA Tomoki, Abdul Wahid Mohamed Rasmy and TAKEGAWA Shinya, India, to conduct field investigation by World Bank Project*
- *May 20-30, MIYAMOTO Mamoru, Yeosu-si and Soeul, Korea, to participate in the 2025 Korea Water Resources Association's Conference To participate in the 20th Annual meeting of The WGDRR and AWG of the UNESCAP/WMO Typhoon Committee*
- *May 27-30, OKADA Tomoyuki, Manila,the Philippines, to participate in the AWDO 2025 Workshop*
- *June 9-15, KOIKE Toshio, MIYAMOTO Mamoru and NAGUMO Naoko, Paris, France, to participate in the UNESCO IHP 50th Anniversary Events in UNESCO HQ*
- *June 16-21, NAGUMO Naoko (17-21), QIN Menglu and Ralph Allen Acierto (18-21), the Philippines, (1) to participate in the 8th Joint Coordinating Committee of HyDEPP-SATREPS (2) to field visit to Santa Maria and Pagsanjan River (3) to bring and install equipment to UPLB*
- *June 22-27, Kattia Rubi ARNEZ FERREL, Singapore, to participate in the 41st International Association for Hydro-environment Engineering and Research (IAHR) World Congress*
- *June 25-28, MIYAMOTO Mamoru, Hainan, China, to participate in Scientific Experiment on EXOTTICCA 2025 and Typhoon Observation International Seminar*

Visitors / 訪問者リスト

* April - June 2025

- *May 8, Director General of ICOMOD to deliver special lecture.*
  - Pema Gyamtsho, Director General of ICOMOD (International Centre for Integrated Mountain Development)
  *See "**Visit by ICIMOD director general**" on page 8*
  *8ページ「**国際山岳総合開発センター事務総長が講演**」参照*

Publications / 対外発表リスト

* April - June 2025

1. Journals, etc. / 学術雑誌（論文誌、ジャーナル）

None / 該当者無し

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

- *MIYAMOTO Mamoru and KOIKE Toshio, Development of Methodology for Enhancing Water-related Disaster Resilience, The 2025 Korea Water Reources Association's Conference, Yeosu, Republic of Korea, May 21-23, 2025*
- *Badri Bhakta Shrestha, Abdul Wahid Mohamed RASMY, TAMAKAWA Katsunori, JOSHI Sauhardra and KURIBAYASHI Daisuke, Hydro-meteorological and Damage Characteristics of September 2024 Flood in the Bagmati River basin of Nepal, Japan Geoscience Union Meeting 2025 (JpGU 2025), Makuhari Messe, Chiba prefecture, Japan, May 25-30, 2025*
- *Md. Shahinur RAHMAN, HARADA Daisuke and EGASHIRA Shinji, NUMERICAL STUDY OF SEDIMENT BUDGET IN THE NOAKHALI ISLANDS AREA OF THE MEGHNA ESTUARY, 41st IAHR World Congress, Singapore, June 22-27 , 2025*
- *SERRANO Jonathan Suba, OHARA Miho, Abdul Wahid Mohamed RASMY, USHIYAMA Tomoki and Ralph Allen Acierto, Assessment of Climate Change Effect to Riverine and Lakeshore Flooding by Developing Flood Risk Curves for the Pasig-Marikina-Laguna Lake Basin, Philippines, 41st IAHR World Congress, Singapore, June 22-27 , 2025*

3. Poster Presentations / ポスター発表

- *Kattia Rubi ARNEZ FERREL, HARADA Daisuke and EGASHIRA Shinji, Effect of sediment mobility on scour around bridge piers, 41st IAHR World Congress, Singapore, June 22-27 , 2025*

4. Magazines, Articles / 雑誌、記事（土技資含む）

None / 該当者無し

5. PWRI Publications / 土研刊行物（土研資料等）

None / 該当者無し

6. Other/ その他

None / 該当者無し

Editor's Note
編集後記

5月中旬、1週間にわたるICHARMのインド現地調査に参加しました。ニューデリーの気温は40℃を超え、人生で最も暑い体験でした。驚いたことに、現地の人は40℃なら涼しいと言います。モンスーン前には、45℃まで上がるからだそうです。近頃は日本でも、「北海道で35℃の猛暑日」と聞いても、あまり驚かなくなりました。温暖化は、良くも悪くも、気候に対する人々の認識を急激に変えています。私たちの生活様式も適応が必要です。

ニューデリーのホテルから、インドのシンボル「インド門」まで15分ほど散歩しましたが、あまりの暑さに、その先は諦めました。40℃には、まだ体が慣れていないようです。

I joined ICHARM's one-week field survey mission to India in mid-May 2025. The temperature in New Delhi climbed over 40°C, which was the hottest experience of my life. To my surprise, local people said that 40°C was rather cool because it often goes up to 45°C before the monsoon season. Come to think of it, these days we are hardly surprised when we hear that the temperature in Hokkaido, Japan's northernmost island, has hit 35°C. Global warming is rapidly changing people's perception of climate, for better or worse. We need to adapt our lifestyles accordingly.

I dared to stroll for about 15 minutes from my hotel in New Delhi to the India Gate, the symbol of India, but gave up walking further due to the extreme heat. I am just not used to 40°C *yet*.

India Gate
インド門

Temperature in New Delhi
ニューデリーの気温

ICHARM Newsletter Editorial Committee
OKADA Tomoyuki

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