Newsletter

unesco
Centre
Under the auspices
of UNESCO

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

PWRI
Public Works Research Institute
National Research and
Development Agency, Japan

Volume 19 No. 3
Issue No. 74
October 2024

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

Message from Executive Director

Climate and water resilience and sustainable development in transboundary river basins

With the increasing severity and frequency of water-related disasters associated with a changing climate, improving climate and water resilience and sustainable development is no longer merely a national challenge but an important, urgent international issue, especially when a river basin spans multiple countries. Amid the global recognition that building and strengthening cooperation in transboundary river basins is essential to address climate and water challenges, the 2030 Agenda has set SDG 6.5: "By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate."

Presentation at the Cairo Water Week/Africa Water Week Joint Meeting (Cairo, Egypt, October 13-17 2024)
カイロ水週間・アフリカ水週合同閣会議での講演
(カイロ、エジプト、2024年10月13-17日)

In Africa, in particular, 63 transboundary river basins cover about 62% of the continent's total area and about 90% of its total water resources. The latest IPCC assessment report projects a decrease in average annual precipitation and soil moisture in the northern and southern parts of Africa. IPCC has also disclosed projections about extremes: more heavy rainfall across the continent, and more agricultural and ecological droughts in the northern and southern regions and fewer in the central area. In sum, while flooding is expected to increase continentwide, there are concerns about extreme dryness in the north and south and extreme wetness in the center. Given these changes, there is an urgent need for coordinated efforts between drying and wetting transboundary river basins and focused efforts to address water challenges among transboundary river basins where drying and wetting areas are anticipated to co-exist.

According to the SDG target indicators, the proportion of transboundary basins with operational agreements for water resources cooperation is low in Africa, at 19%. While this situation needs improvement, some transboundary river basins, such as the Senegal River basin and the Zambezi River basin, have already been sharing data and implementing joint efforts. Considering that an international legal framework for the management of transboundary rivers has also been in place, what is needed is POLITICAL WILL.

Climate and the water cycle are subject to so many factors. They are influenced by greenhouse gas and aerosol emissions. They are also affected by various physical processes, such as the Hadley Circulation, monsoons, the modes of variability, including the El Niño Southern Oscillation and the Indian Ocean Dipole Mode, and the accelerated convection associated with global warming. Uncertainties involved in many aspects cannot be ignored. All these considered, it is essential to strengthen natural science approaches to enhance preparedness for challenges we may face under a changing climate. However, other approaches are equally important to cultivate the POLITICAL WILL urgently needed for the concerted management of transboundary rivers. They include strengthening the climate and water resilience of individual countries; formulating integrated scientific and technological knowledge that comprehensively contributes to sustainable development, including quality-of-life improvement and poverty eradication; and fostering facilitators who play a vital role in sharing this knowledge with society.

October 31, 2024
KOIKE Toshio
Executive Director of ICHARM

越境河川流域における気候と水のレジリエンスと持続可能な開発

気候の変化に伴う水災害の激甚化、頻発化が顕在化する中、気候と水のレジリエンスの向上と持続可能な開発は、一国内の課題にとどまらず、複数の国を貫流する越境河川流域において重要かつ喫緊の課題となっています。その課題解決には越境河川における協力体制の構築とその強化が不可欠で、SDG6.5「2030 年までに、国境を越えた適切な協力を含む、あらゆるレベルでの統合水資源管理を実施する。」が掲げられています。

特にアフリカでは、63 の越境河川流域が、アフリカ全面積の約 62% の領域、総水資源量の約 90% を占めています。最新の IPCC 評価報告書では、平均の年降水量と土壌水分量については北部と南部で減少が予測されています。極端事象について、豪雨はアフリカ全土で増加し、農業・生態系渇水は北部・南部で増加、中央部で減少すると予測されています。したがって、アフリカ全土で洪水が増加する一方で、北部・南部での極端な乾燥化と中央部で極端な湿潤化が懸念されています。このような変化が進行する中で、乾燥化、もしくは湿潤化する越境河川での協調した取り組みや、乾燥化と湿潤化を同じ流域内に抱える越境河川での水課題解決の取り組みが急がれます。

SDG のターゲット指標の報告によれば、水資源協力のための運営協定がある越境流域の割合は、アフリカでは 19% と低い値になっています。その中でも、セネガル川流域やザンベジ川流域など、データを共有し、協調した取り組みが進められている越境河川もあります。越境河川の管理に関する国際法的な枠組みも整えられていますので、必要なことは political will であるとも言われております。

温室効果ガスおよびエアロゾルの排出に伴って変化する気候と水循環には、ハドレー循環、モンスーン、エルニーニョ南方振動やインド洋ダイポールモードなので地球変動現象、温暖化に伴う対流現象の強化等、様々な物理過程が関係しており、不確実性も無視できません。これらの自然科学的なアプローチの強化に加え、各国の気候と水のレジリエンスの強化と、生活の質の向上や貧困撲滅など持続可能な開発に包括的に貢献する統合的な科学技術知の形成と、それを社会と共有する役割を担うファシリテータの育成が重要と考えます。これらによって、political will の醸成に貢献することができます。

Contents

Special Topics

Information Networking

Research

Training & Education

Public Relations

Miscellaneous

Special Topics

Executive Director received the inaugural GEWEX Lifetime Contribution Award
小池俊雄 ICHARM センター長、全球エネルギー水循環プロジェクト（GEWEX）第 1 回生涯貢献賞を受賞

Executive Director KOIKE with the trophy
小池センター長

On July 10, 2024, KOIKE Toshio, the executive director of ICHARM, received the inaugural GEWEX Lifetime Contribution Award.

GEWEX, short for the Global Energy and Water Exchange project, is an international collaborative initiative aiming to scientifically understand the global water and energy cycles and their influence over the climate and investigate the impact of changing climates on water use and water disasters.

GEWEX held its first conference in the UK in 1994 and the 9th conference in Sapporo, Japan, this July. The GEWEX Scientific Steering Group established the Lifetime Contribution Award this year to honor individuals who have made significant contributions to GEWEX research and the community throughout their careers. Executive Director Koike is one of the first two recipients, along with Dr. Jack Kaye, the associate director for research in the Earth Science Division of NASA's Science Mission Directorate.

(Written by TAKEGAWA Shinya)

2024 年 7 月 10 日、小池俊雄 ICHARM センター長が全球エネルギー水循環プロジェクト（Global Energy and Water Exchange : GEWEX）第 1 回生涯貢献賞を受賞しました。

GEWEX は、地球規模で循環する水やエネルギーと気候の成り立ちを科学的に理解し、気候の変化が水利用や水災害に及ぼす影響について研究する国際協力プロジェクトです。

その第 1 回国際会議は 1994 年にイギリスで開催され、今年 7 月に札幌にて第 9 回会議が開催されました。今回から創設された GEWEX 生涯貢献賞は、長年にわたって GEWEX 研究や そのコミュニティに多大な貢献をしてきた者を表彰するもので、第 1 回目の受賞者として、米国航空宇宙局 (NASA) 地球科学副部長の Jack Kay 博士と小池センター長の 2 人が選ばれました。

Information Networking

Nile Cooperation for Climate Resilience (NCCR) Workshop in Ethiopia
エチオピアで行われた Nile Cooperation for Climate Resilience (NCCR) Workshop への参加

Mr. Mori and Dr. Mohamed Rasmy from ICHARM participated in a workshop organized by the East Nile Technical Regional Office (ENTRO) on July 14-15, centered on the Nile Cooperation Project for Climate Change Resilience (NCCR). This workshop aimed to enhance collaboration among Nile Basin countries in managing and developing climate-resilient water resources. Attendees included representatives from various dam-related organizations such as ICOLD, USACE, USBR, the United States Society of Large Dams, the Canadian Dam Association, and ICOLD Switzerland, alongside the Nile River Initiative (NRI) Secretariat, ENTRO, and the World Bank (participating online). Representatives from NRI member countries were also present, contributing to discussions on cooperative efforts in the region.

During the workshop, participants reviewed progress on establishing a dam safety training center and associated training programs, led by ENTRO. ICHARM representatives highlighted their initiatives in human resource development and training for government officials in developing countries. They also showcased advancements in technology for optimizing dam operations through analyses of rainfall, runoff, inundation, and reservoir inflow forecasting. The discussions emphasized potential collaboration in meteorology, hydrology, and climate change impact analysis, particularly concerning the planned curriculum and training internships. Additionally, there were discussions on future collaborations, including further training programs and technical activities focused on dam safety. The workshop participants also visited two power generation dams (GIBE3 Dam and Koysha Dam) managed by Ethiopian Electric Power (EEP), a state-owned company.

森範行グループ長とモハメッド・ラスミー主任研究員は、7 月 14 ～ 15 日、エチオピア国アジスアベバで、東ナイル技術地域事務所（ENTRO）が主催した気候変動レジリエンスのためのナイル協力プロジェクト（NCCR）を主題としたワークショップに参加しました。このワークショップは、気候変動に強い水資源の管理と開発におけるナイル流域諸国間の協力を強化することを目的としています。出席者には、ICOLD、USACE、USBR、米国大型ダム協会、カナダダム協会、ICOLD スイスなどのさまざまなダム関連団体の代表者のほか、ナイル川イニシアチブ（NRI）事務局、ENTRO、世界銀行（オンラインでの参加）も含まれていました。NRI 加盟国の代表も出席し、地域における協力の取り組みについての議論に貢献しました。

ワークショップ中、参加者は ENTRO が主導するダム安全トレーニングセンターの設立と関連トレーニングプログラムの進捗状況をレビューしました。ICHARM の代表者は、開発途上国の政府職員の人材育成と研修における取り組みを強調しました。議論では、特に計画された

カリキュラムと研修インターンシップに関して、気象学、水文学、気候変動の影響分析における協力の可能性が強調されました。さらに、ダムの安全性に焦点を当てた更なる研修プログラムや技術活動など、将来の協力関係についても議論が行われました。ワークショップ参加者はまた、国営企業エチオピア電力（EEP）が管理する 2 つの発電ダム（GIBE3 ダムとコイシャダム）を訪問しました。

Workshop participants
(Source: https://nilebasin.org/content/consultation-workshop-held-discuss-strategic-partnerships-establishment-nile-basin-dam)
ワークショップの参加者

GIBE3 Dam
GIBE3 ダム

Senior Researcher Rasmy (center) visiting a dam site with the ENTRO director (second from left), and the ICOLD president (first from left)
ENTRO 所長（左から 2 番目）、ICOLD 会長（左端）とともにダム現場を訪問するラスミー主任研究員（中央）

(Written by Abdul Wahid Mohamed RASMY)

Training for Sri Lanka visitors
スリランカ研修

7 月 18 日に、スリランカ国の気象局から 4 名、国家災害管理局、灌漑局、建設研究所、土地開発公社から各 1 名の管理職や技術者が、国際協力機構（JICA）と日本気象協会の担当者とともに研修として訪れました。牛山朋來主任研究員、ジャヤセカラ サチンタ博士学生、サンジーワイランガシンガ博士学生によるレクチャーを行いました。

これは JICA がスリランカ気象局を対象として行っている技術協力プロジェクト「スリランカ国気象レーダー活用による気象観測及び予警報能力強化プロジェクト」の枠組みで実施しており、2 年後に整備されるＣバンド二重偏波気象レーダーを用いた降水量算出や、コロンボ周辺の河川氾濫対策に利用されるものです。牛山朋來主任研究員からは、ICHARM で国際洪水イニシアティブ（IFI）の枠組みで進めているスリランカ国のリアルタイム降水洪水監視予測システムの開発の経緯や取り組み、洪水災害事例の解析、能力開発活動などについて紹介を行いました。スリランカからは ICHARM で行っている博士・修士課程から数多くの卒業生を輩出しており、これまで IFI プラットフォームを始めとする積極的な能力開発活動、アジアオセアニア地球観測に関する政府間会合（AOGEO）等の国際会議における活動等について紹介しました。ジャヤセカラ サチンタ博士学生からは、彼女が進めているスリランカの豪雨災害とサイクロンとの関係につ

On July 18, nine Sri Lankan officials visited ICHARM for part of their professional training, accompanied by the training staff of the Japan International Cooperation Agency (JICA) and the Japan Weather Association. Among them, four were from the Meteorological Department, and one each from the Disaster Management Centre, the Irrigation Department, the National Building Research Organisation, and the Land Development Corporation. Senior Researcher USHIYAMA Tomoki lectured about ICHARM's efforts related to Sri Lanka, and two students from Sri Lanka, Jayasekara Sachintha and Sanjeewa Illangasingha, who are currently enrolled in ICHARM's doctoral program, also gave presentations.

This opportunity took place within the framework of the Project for Strengthening the Capacity for Weather Observation and Prediction and Warning through the Use of Weather Radar in Sri Lanka, a technical cooperation project organized by JICA for the Meteorological Department of Sri Lanka. The project aims to prepare local experts to conduct precipitation estimation using a C-band dual polarization weather radar, which will be installed in two years. It also aims to increase their capability of planning and implementing practical river flood control measures around the Colombo area. Ushiyama spoke about ICHARM-led projects conducted for Sri Lanka in the framework of the International Flood Initiative (IFI). His talk included the background and development of a real-time precipitation flood monitoring and forecasting system, analyses of flood disaster cases, and capacity-building activities. He also mentioned that many Sri Lankan students have graduated from ICHARM's graduate program and

Group photo
集合写真

told the visitors that those graduates are actively engaging in various projects, such as IFI's platform project, and participating in international conferences, such as the Asia Oceania Group on Earth Observation (AOGEO). After that, Jayasekara presented her ongoing work on the relationship between heavy rainfall disasters and cyclones in Sri Lanka, and Sanjeewa explained his doctoral research about a holistic analysis system to support water resource policy decisions under climate change.

ICHARM hopes that these presentations will help empower Sri Lankan officials to plan and implement effective disaster management measures.

(Written by USHIYAMA Tomoki)

いて紹介しました。サンジーワ イランガシンガ博士学生は、彼の博士研究である、気候変動下での水資源政策決定を支援する総合的分析システムについて紹介しました。

これらの発表が、スリランカ国の防災計画に資することを期待します。

Young visitors from Tsinghua University, China
中国清華大学学生ご訪問

A group of 14 students from the Department of Hydraulic Engineering of Tsinghua University, China, led by Associate Professor Yifei CUI, visited ICHARM on July 29. The visit was part of their international study trip to learn more about floods and geohazards in Japan. ICHARM welcomed them by providing lectures with Q&A sessions, as well as a research facility tour.

Before the lectures, Associate Professor Cui briefly spoke about his research on geohazard mitigation and early warning systems. The series of lectures started with an ICHARM researcher providing an overview of various activities at ICHARM, followed by others covering a wide range of topics, including "Prediction models of water-related disaster risks: progress, challenges, and future direction," "Prediction of water, sediment, and driftwood runoff during extreme events using the Rainfall-Sediment-Runoff (RSR) model," and "Development of CLVDAS-based drought monitoring system." At each Q&A session, Chinese students asked many questions. The interaction was particularly active after the presentation on hazard prediction using the RSR model, which indicated their high interest in floods and geohazards.

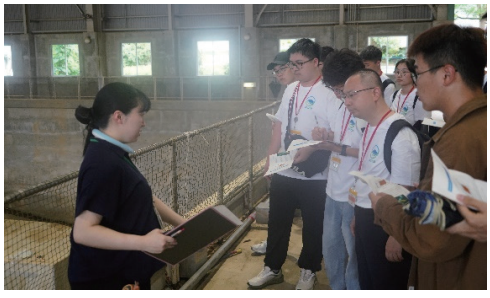
Then, the students took a facility tour of the Earth Structure Laboratory and listened to laboratory staff explaining their experiments and equipment.

ICHARM will continue to contribute to society by providing information on our efforts to reduce water-related disaster risks to a wide range of people in Japan and abroad whenever the opportunity arises.

Lecture by an ICHARM researcher
ICHARM 研究者による講義

Q&A session
質疑応答

Group photo of participants
参加者の集合写真



The facility tour
施設見学風景

(Written by TAKEGAWA Shinya)

中国清華大学土木水利学院の学生14名と引率の Yifei CUI 准教授が、7月29日に国際研修旅行の一環として ICHARM を訪問され、職員からの講義や質疑応答、施設見学を行いました。

この国際研修旅行は、日本における洪水と土砂災害について理解を深めることを目的としており、冒頭で Yifei CUI 准教授が取り組んでいる土砂災害の軽減や早期警報システム等に関する研究の概要を説明しました。講義では、ICHARM の概要紹介に始まり、水災害リスクモデルの進展・課題・今後の方向性、降雨 - 土砂 - 流出（RSR）モデルを用いた異常気象時の水・土砂・流木の流出予測、植生動態－陸面データ同化システム（CLVDAS）に基づく干ばつモニタリングシステムの開発など幅広い内容を紹介しました。質疑応答では、特に RSR モデルを用いた異常気象時の水・土砂・流木の流出予測の発表に対して多くの質問が寄せられ、洪水と土砂災害に対する学生の関心の高さを感じました。

施設見学では、盛土実験施設を訪れ、実験の目的や装置などについて担当職員から説明を受けました。

ICHARM では、今後も機会があれば水災害リスクの軽減のための取り組みを広く国内外の方に説明し、社会に貢献していく所存です。

Lectures for Rwandan and Paraguayan visitors
ルワンダ国、パラグアイ国研修生を対象とした衛星データを活用した洪水予報警報システムに係わる講義

8月27日に、ルワンダ国の危機管理省、気象庁、宇宙庁から各2名、また、パラグアイの宇宙庁から6名、植物・種子品質・検疫機構から1名の管理職や技術者が日本側関係者とともにICHARMを訪問しました。これはJICAが両国を対象に「宇宙分野人材育成」のプロジェクトのもとで、衛星データ利活用研修の一環として、ICHARMにおける「衛星データ（GSMaP）を活用した洪水予報警報システムに関する講義」の受講目的としたものです。玉川勝徳専門研究員、牛山朋來主任研究員がレクチャーを行いました。

玉川勝徳専門研究員からは、ICHARMやデータ統合・解析システム(DIAS)の紹介の後、UNESCO「西アフリカにおける気候変動を考慮した水災害軽減のためのプラットフォーム（WADiRE-Africa)」プロジェクトで、ニジェール川及びボルタ川流域を対象とした洪水早期警報システム（FEWS)、また、オンラインe-Learningシステムの紹介を行いました。牛山朋來主任研究員からは、国際洪水イニシアティブ（IFI）の枠組みで進めているスリランカ国のリアルタイム洪水監視予測システムの紹介、また、「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」HyDEPP-SATREPSプロジェクトやIFIの枠組みで進めている、フィリピン国のリアルタイム洪水監視システムや将来気候における浸水域予測について紹介を行いました。参加者からは水文モデルは何を使用しているのか、モデルの時間・空間解像度はどの程度か、この結果をどのように利活用しているのか等積極的な質問がありました。

本研修がルワンダ国、パラグアイ国の洪水監視や予測に資することを期待します。

A total of 13 management and engineering officials, accompanied by their Japanese counterparts, visited ICHARM on August 27. Six were from Rwanda (two each from the Ministry in Charge of Emergency Management, the Rwanda Meteorology Agency, and the Rwanda Space Agency), and seven were from Paraguay (six from the Space Agency and one from the Creation of the National Service for Plant and Seed Quality and Health). This visit was part of their training on satellite data utilization under the Human Resource Development in the Space Sector project conducted by JICA for both countries. Research Specialist TAMAKAWA Katsunori and Senior Researcher USHIYAMA Tomoki gave lectures on flood forecasting and early warning systems using satellite data (GSMaP).

Tamakawa started his lectures by briefly explaining ICHARM and the Data Integration and Analysis System (DIAS), and then spoke about a UNESCO-led project, "the Platform for Water-related Disaster Reduction in the Context of Climate Change in West Africa (WADiRE-Africa)," in which ICHARM developed the Flood Early Warning System (FEWS) for the Niger and Volta River basins and implemented an e-learning system for local staff involved in this effort. Ushiyama explained two projects in which ICHARM has been involved. One was about the implementation of a real-time flood monitoring and forecasting system in Sri Lanka, which is currently in process within the framework of the International Flood Initiative (IFI), and the other was about the implementation of a real-time flood monitoring system and the projection of inundation areas in a future climate in the Philippines, conducted under IFI and the "Project for Development of a Hybrid Water-Related Disaster Risk Assessment Technology for Sustainable Local Economic Development Policy under Climate Change in the Philippines (HyDEPP-SATREPS)." The participants were highly interested in these projects and asked many questions, for example, about the types of hydrological models, the temporal and spatial resolutions of the models, and the use and availability of the project outcomes.

ICHARM hopes that the lectures will help the officials and engineers improve flood monitoring and forecasting in Rwanda and Paraguay.

Rwandan and Paraguayan visitors with ICHARM researchers (center, in a white shirt)
ルワンダ国、パラグアイ国研修生とICHARM研究員（中央、白いシャツ着用）

(Written by TAMAKAWA Katsunori and USHIYAMA Tomoki)

The AWCI Session at the 16th AOGEO Symposium
第16回AOGEOシンポジウムにおけるアジア水循環イニシアティブ（AWCI）セッションの開催

2024年9月3日から5日にかけて第16回アジア・オセアニア地域GEO（AOGEO）シンポジウムが"Creating Earth Intelligence with the

The 16th Asia Oceania GEO (AOGEO) Symposium was held in Tokyo, Japan, from September 3 to 5, 2024, under the theme of "Creating Earth Intelligence with the Asia Oceania Society." The Asian Water Cycle Initiative (AWCI) session was held on

September 4 as one of the Task Groups and attended by 62 participants consisting of 38 online and 24 on-site, including Executive Director KOIKE Toshio, Senior Researcher MIYAMOTO Mamoru, and Researcher TAKEGAWA Shinya from ICHARM. The AWCI session has also been used as a meeting opportunity for key stakeholders from the countries participating in the "Platform on Water Resilience and Disasters" to share and discuss the progress of their efforts and future activity plans. The platform activities are initiatives for water-related disaster resilience promoted by the International Flood Initiative (IFI), whose secretariat is ICHARM.

The AWCI session began with a special speech by Professor Sameh Ahmed Kantoush of the Disaster Prevention Research Institute, Kyoto University, followed by country reports from the Philippines, Sri Lanka, Thailand, Indonesia, and Pakistan. Through these presentations, the participants shared each country's efforts in data integration, water-related disaster risk assessment, capacity development and Facilitator fostering, and governance building. Afterward, Professor KAWASAKI Akiyuki of the University of Tokyo's Institute for Future Initiatives gave a special lecture on water and poverty. In the afternoon, thematic presentations on the water-food-energy nexus were given by the Ministry of Natural Resources and Environment of Vietnam, the Mahaweli Authority of Sri Lanka, the National Water Resources Department of Thailand, and ICHARM, each introducing their interdisciplinary challenges and initiatives. After these presentations, the participants joined to discuss the outcomes of the session. The discussion results were compiled with input from information science by Associate Professor YASUKAWA Masaki of the Global Environmental Data Commons, the University of Tokyo, and a session summary by Executive Director Koike for drafting the statement of the 16th AOGEO Symposium. The adopted statement is available on the AOGEO Symposium website (https://www.aogeo16th.com/).

Onsite participants in the AWCI Session
AWCI セッションの現地参加者

(Written by MIYAMOTO Mamoru)

Asia Oceania Society" というテーマのもと東京において開催されました。その第 1 分科会として 9 月 4 日に開催された AWCI セッションには、現地 24 名オンライン 38 名の最大 62 名が参加しました。AWCI セッションは ICHARM が事務局を務める国際洪水イニシアティブ（IFI）が推進する「水のレジリエンスと災害に関するプラットフォーム」の各国関係者が集まりこれまでの取り組みの進捗や今後の活動計画を共有・議論する機会としても活用されています。

京都大学防災研究所教授のサメアーメッドカントウシュ先生の特別スピーチで開始された AWCI セッションは、フィリピン、スリランカ、タイ、インドネシア、パキスタンからのカントリーレポートを受け、各国のデータ統合や水災害リスク分析、能力開発およびファシリテーター育成、ガバナンス形成に関する取り組みを共有しました。その後、特別講義として水と貧困に関する発表が東京大学未来ビジョン研究センターの川崎昭如教授から行われました。午後には、水—食料—エネルギーに関するテーマ別プレゼンテーションが行われ、ベトナムの天然資源環境省、スリランカのマハウェリ公社、タイの国家水資源局、ICHARM からそれぞれ分野横断的な課題と取り組みが紹介されました。これらの発表を踏まえ、会議成果を議論する時間がセッション最後に設けられ、東京大学地球環境データコモンズの安川雅紀准教授による情報科学からのインプットと小池俊雄センター長のサマリーと共に第 16 回 AOGEO シンポジウムのステイトメントへの提案がまとめられました。採択されたステイトメントは AOGEO シンポジウムのウェブサイトでご覧いただくことができます（https://www.aogeo16th.com/）。

Visitors from MJIIT, Malaysia
マレーシア日本国際工科院ご訪問

Four people from the Malaysia-Japan International Institute of Technology (MJIIT) visited ICHARM on September 17, 2024. ICHARM welcomed them by providing lectures with Q&A sessions. MJIIT is an academic institution in Malaysia that provides Japanese-style engineering education. It was established by the Malaysian government in May 2010 based on an agreement between the leaders of Japan and Malaysia, and its main purpose is to promote human exchange and human resource development between Japan and Malaysia.

マレーシア日本国際工科院（MJIIT）の 4 名が 9 月 17 日に ICHARM を訪問し、職員からの講義を受けて意見交換を行いました。マレーシア日本国際工科院は、マレーシアにおいて日本型の工学系教育を行う学術機関であり、日・マレーシア首脳間の合意を踏まえ、2010 年 5 月にマレーシア政府により設立が決

定されました。日本とマレーシアとの間での人的交流促進や人材育成を主な目的としています。

講義では、ICHARM の概要紹介に続いて、アンサンブル降雨予測、RRI 水文モデル、仮想洪水体験システムに関する研究を紹介しました。意見交換では、各研究で用いられるモデルやシステムのメカニズムに関する質問が多く出されました。

本イベントはマレーシアの学術機関に ICHARM の技術を知ってもらう良い機会となりました。今後もこのような取り組みを通じて、ICHARM の活動や成果を世界に発信していく予定です。

The lectures began with an overview of ICHARM, followed by a series of studies on ensemble rainfall prediction, RRI hydrological modeling, and a virtual flood experience system. During the Q&A session, the visitors asked many questions about the models and system mechanisms used in each study.

This event provided a good opportunity to introduce ICHARM's technologies to an academic institution in Malaysia. We will continue to promote ICHARM's activities and achievements to the world through such efforts.

Lecture by an ICHARM researcher
ICHARM 研究者による講義

Malaysian visitors with the ICHARM deputy director (right)
記念写真

(Written by TAKEGAWA Shinya)

Typhoon Committee: The workshop on “Capacity Building/Knowledge Sharing in DRR” 台風委員会「災害リスク軽減における能力開発と知恵の共有」に関するワークショップへの参加

2024 年 9 月 24 日に、台風委員会（TC）の防災部会が主導する「災害リスク軽減における能力開発と知恵の共有」に関するワークショップが ICHARM にて開催されました。台風委員会の中には気象部会（WGM）、水文部会（WGH）、防災部会（WGDRR）、トレーニング・研究連絡部会（TRCG）の 4 つの作業部会がありますが、今回のワークショップには台風委員会事務局（TCS）から 1 名、防災部会の議長国である韓国の NDMI（National Disaster Management Institute）から 6 名、マカオから 2 名、ベトナムから 1 名、防災科学技術研究所から 2 名、ICHARM から水文部会議長の宮本守主任研究員と武川晋也研究員の 2 名が参加しました。本ワークショップは災害リスク軽減に関連する政策、技術、研究結果などの情報や経験をメンバー間で共有することと、効率的かつ効果的に成果を最大化するための参加者間の協力を強化することを目的とした分野横断プロジェクトの一環として実施されたものであり、今回が初めての開催でした。

ワークショップでは、災害リスク軽減に関する幅広い取り組みや成果の発表、意見交換を行い、水文部会と防災部会が連携して国際会議でセッションを主催するなどの協力案が議論されました。ICHARM では、台風委員会を水災害リスク軽減のための最も重要な国際的枠組みの 1 つと位置づけ、引き続き地域間協力の強化のために貢献していく所存です。

The workshop on “Capacity Building/Knowledge Sharing in DRR,” led by the Working Group on Disaster Risk Reduction of the Typhoon Committee (TC), was held for the first time at ICHARM on September 24, 2024. There are four working groups within the Typhoon Committee: 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 workshop was attended by 14 participants, consisting of one from the Typhoon Committee Secretariat (TCS), six from the National Disaster Management Institute (NDMI) of the Republic of Korea, two from Macao, one from Vietnam, two from the National Research Institute for Earth Science and Disaster Resilience (NIED), and two from ICHARM, Senior Researcher MIYAMOTO Mamoru, who presently serves as the WGH chair and Researcher TAKEGAWA Shinya. The workshop was part of a cross-sectoral project aimed at sharing information and experiences on policies, technologies, and research results related to DRR and strengthening cooperation among the participants to maximize the outcomes of TC’s activities efficiently and effectively.

During the workshop, a wide range of initiatives and achievements related to DRR were presented and discussed, as well as ideas for cooperation, such as the collaboration of WGH and WGDRR to host a session at an international conference. ICHARM recognizes TC as one of the most important international frameworks for the risk reduction of water-related disasters and will continuously contribute to strengthening interregional cooperation to achieve the committee’s goals.

The workshop
ワークショップの風景

Group photo
集合写真

(Written by TAKEGAWA Shinya)

Research

Introduction of ICHARM research projects / 研究紹介

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

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

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

In this issue, Researcher TAKEGAWA Shinya reports on a study on river channel management indicators to help evaluate the progression of channel bipolarization.

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武川　晋也研究員より「河道の二極化進行の判断に資する河道管理指標の検討」を紹介します。

Study of river channel management indicators to help determine the progression of channel bipolarization
河道の二極化進行の判断に資する河道管理指標の検討

TAKEGAWA Shinya, Researcher
武川 晋也 研究員

In recent years, the development of sandbars and the progression of forestation in many rivers across Japan has caused the bipolarization of river channels (Figure 1), in which the riverbed on the opposite bank of the stabilized sandbars continuously erodes. As bipolarization progresses, river maintenance and management costs increase due to tree felling and large-scale soil excavations to lower sandbars. However, effective approaches to controlling this phenomenon have not been developed. Existing bipolarization indices are not designed to take into account factors considered important for predicting bipolarization, such as annual changes in river stage, bar development over time, and sediment disturbance intensity, halting the analysis of factors that cause bipolarization.

In addition, there are no management indicators that can be used to propose river cross-sections for effective channel excavation to prevent the phenomenon. Given these challenges, it is difficult to say that excavation is being conducted efficiently in consideration of cost reduction in terms of the scale and number of excavations.

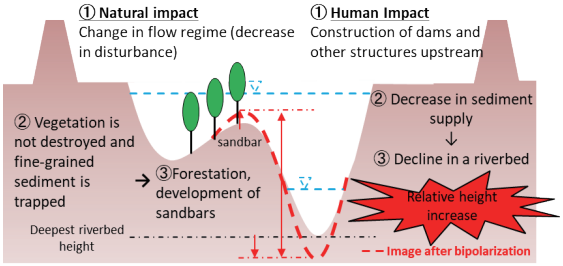


Figure1. Diagram of river channel cross section and bipolarization
図 1. 河道の横断面と二極化のイメージ図

In this study, we aimed to propose indicators to assess the status of bipolarization. Focusing on the sandbar flooding rate, we analyzed its relationship with the progression of bipolarization based on actual data and examined indicators and their thresholds for roughly evaluating the development of bipolarization. The target river was segment 1 of the Kiso River (41-56k, Figure 2), where bipolarization has been in progress since 1992 and where bridge pier damage occurred due to small or medium scale flooding. We calculated the sandbar flooding rate for each cross-section based

近年、全国の多くの河川において、砂州の発達や樹林化が進行し、固定化した砂州の対岸で澪筋の河床低下が進行する二極化（図 1）が問題視されています。二極化が進行すると、樹木伐採や砂州を切り下げるための大規模な土砂掘削等で維持管理コストが増加します。しかし、既往の二極化指標では二極化を予測する上で重要と考えられる年間の位況変化、経年的な砂州の発達状況、土砂の攪乱強度等の要素が考慮されておらず、二極化進行の要因分析には至っていません。また、対策として有効な河道掘削の断面を設定するための具体的な管理指標が存在せず、掘削規模や回数等のコストの縮減を考慮した効率的な掘削がなされているとは言いがたいのが現状です。

本研究では、二極化進行を判断するための指標を提示することを目的とし、砂州冠水率に着目し、実データを基に二極化進行との関係を整理し、二極化進行を概略評価するための指標とその閾値を検討しました。対象河川は、平成 4 年以降に二極化が進行し、中小出水により橋脚被害が発生した木曽川セグメント 1 区間（41 ～ 56k、図 2）とし、経年的な定期横断測量と毎時の位況データから各断面の砂州冠水率を算出し、図 3 に示す砂州冠水時間の縦断差分 (T-Tu) との関係を整理しました。砂州冠水率と砂州冠水時間の縦断差分の関係を図 4 に示します。昭和 38 年

時点（図 4(a)）では、砂州冠水率が全体的に大きいですが、平成 27 年時点では砂州冠水率が 20% 以下の範囲に集中してプロットされるとともに、10% 以下の範囲では T-Tu の値がかなり小さくなる箇所が現れます（図 4(b)）。これは、澪筋に流れが集中し、河床低下しやすい状態にあることを意味しています。上記結果を、横断測量結果 (図 2) から判断される二極化の実態と比較すると、昭和 38 ～昭和 62 年頃は河床が高く澪筋も固定しておらず河岸再形成が生じていましたが、平成 4 年以降は徐々に河床が低下し、平成年代以降は二極化が進行していました。よって、木曽川では砂州冠水率によって二極化進行を概ね把握できることが示されました。 図 4(c) は、平成 27 年河道を基本とし砂州を平水位の高さまで切り下げた場合の結果を示しています。これにより砂州冠水率が全体的に大きくなることから、河道が安定傾向となり、二極化を抑制する方向に働くものと予想されます。

以上より、砂州冠水率を指標とすることで、二極化進行を概略推定できることがわかりました。河川毎に二極化進行にシフトする際の砂州冠水率を見極め、その値を目安として砂州を掘削すれば、極端な再堆積を生じさせず、二極化進行をなるべく抑制できる可能性があり、河道計画検討の手引き等の改定に資する基礎資料として活用が期待されます。

参考文献
持続可能性の観点からの河道の設計手法，国土技術政策総合研究所年報 (令和 3 年度)，pp.42-43

on the periodic cross-sectional survey results and hourly river level data, and identified its relationship with the longitudinal difference (T-Tu) of sandbar flooding time, as shown in Figure 3. Figure 4 illustrates the relationship between the sandbar flooding rate and the longitudinal difference of sandbar flooding time. Compared with the sandbar flooding rate in 1963, which is generally high (Figure 4(a)), the rate in 2015 is mostly plotted in the range of 20% or lower, with the T-Tu value quite small when the rate is in the range of 10% or less (Figure 4(b)). Such low figures generally mean that the flow is concentrated in the current flow path which likely cause the riverbed to erode further. These results, in comparison with the actual situation of bipolarization confirmed from the cross-sectional survey results (Figure 2), indicate that the riverbed was high from 1963 to 1987, the channel was not stable, and riverbank reformation was underway. They also suggest that the riverbed gradually lowered after 1992, allowing bipolarization to advance from then on. These analyses show that the sandbar flooding rate can roughly explain the progression of bipolarization in the Kiso River. Figure 4(c) shows the results when the sandbar is lowered to the normal water level based on the 2015 river channel. This adjustment is expected to increase the overall rate of sandbar flooding and thus stabilize the river channel, consequently controlling bipolarization.

Our study shows that the sandbar flooding rate can be a useful indicator for roughly estimating the progression of bipolarization in rivers. By determining the sandbar flooding rate at the time when the river channel starts shifting to bipolarization for each river, we can use it as the threshold to excavate sandbars. Such criteria could potentially help prevent extreme redeposition and control the progression of bipolarization to some degree. In addition, our proposed approach can be a valuable addition to the guidelines for river channel planning, enhancing the efficiency of bipolarization assessment.

References;
River design methods from the perspective of sustainability, YEARBOOK OF NILIM (APRIL 2021 ~ MARCH 2022), pp.42-43

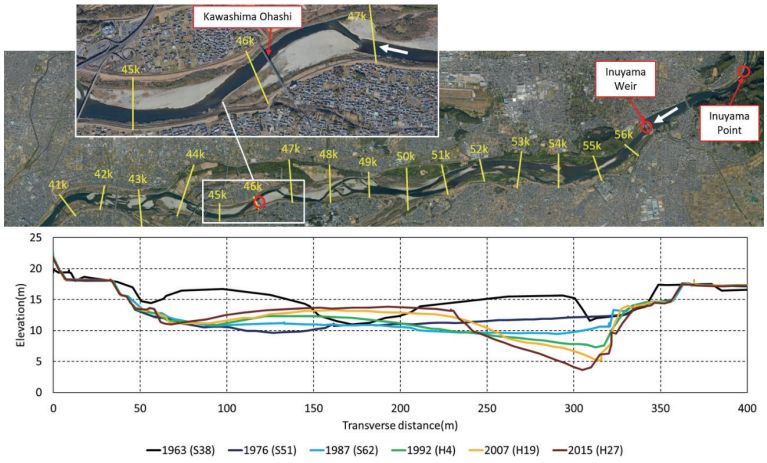


Figure2. Aerial photographs of the Kiso River Segment 1 section (41k-56k) and the change in cross-sectional shape of 46.2k ver time

図 2. 木曽川セグメント 1 区間 (41k ～ 56k) の空中写真と 46.2k の横断形状の経年変化

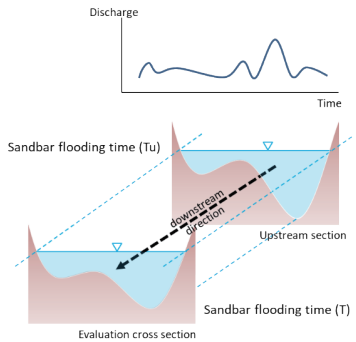


Figure3. Image of calculation of sandbar flooding rate and longitudinal difference of sandbar flooding time (T-Tu)

図 3. 砂州冠水率と砂州冠水時間の縦断差分 (T-Tu) の算定イメージ

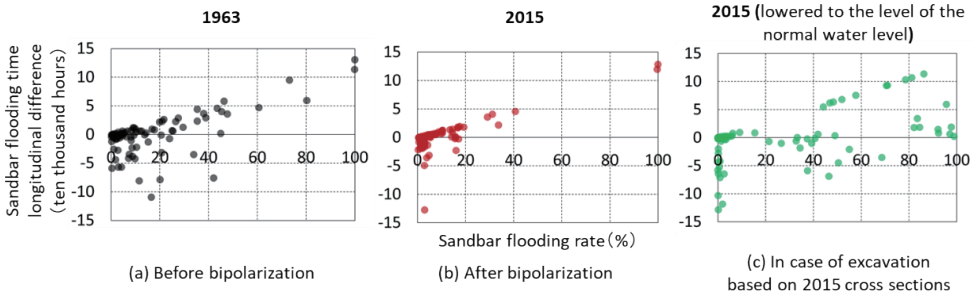


Figure4. Relationship between sandbar flooding rate and longitudinal difference of sandbar flooding time (T-Tu)

図 4. 砂州冠水率と砂州冠水時間縦断差分 (T-Tu) との関係

Research trip to Argentine for a SATREPS project
SATREPS アルゼンチン出張報告

An ICHARM research team of Senior Researcher USHIYAMA Tomoki, Senior Researcher NAITO Kensuke, Researcher YAMASHITA Daiki, and Research Specialist TAMAKAWA Katsunori visited Argentina to attend a Joint Coordination Committee (JCC) meeting, research meetings, workshops and field surveys held over 12 days from July 29 to August 9, 2024. These events were planned under a research project focusing on Argentina, which is part of the Science and Technology Research Partnership for Sustainable Development (SATREPS). This five-year project, starting in 2022, aims to mitigate the impact of flood inundation disasters in two Argentine cities, Buenos Aires and Cordoba, by developing numerical weather prediction systems with local data assimilation and improving weather observation systems, hydrological forecasting systems, and alert information dissemination systems. ICHARM is tasked to develop hydrological forecasting systems. During this trip, the team investigated rivers and sewerage systems in these cities, where the country plans to implement flood control measures, and collected information necessary for building a rainfall-runoff inundation model, such as river cross-sections. They also checked the status of improvements to observation facilities at different locations.

On July 30, the research team inspected the new water level gauge installed in the Sant Domingo River basin in Buenos Aires. The team observed backflow from the Rio de la Plata River around the downstream end of the Sant Domingo River and found that this phenomenon affects the discharge from the pump station. Since conventional rainfall-runoff inundation models are not designed to consider this kind of tidal effects, the team plans to improve them based on the latest observed water level data. They also confirmed that, despite the backflow, the pumps at the station are powerful enough to quickly drain floodwaters during inland flooding, playing an important role in reducing flood damage in urban areas. After the pump station, the group visited the flood control pond at the upstream end and checked the water level gauges installed there. Capturing water level changes in the upper reaches will improve the accuracy of flood forecasting models and allow for a more accurate understanding of hydrological dynamics throughout the basin. This information is significantly valuable for future simulations.

Researchers at work during the visit to the Sant Domingo River Basin
Sant Domingo 川流域視察の様子

JCC meeting in session
JCC ミーティングの様子

Research Specialist Tamakawa delivering a presentation at the Ministry of Infrastructure and Public Services of the State of Córdoba
コルドバ州インフラ・公共サービス省で研究事例を紹介する玉川専門研究員

Senior Researcher Naito giving a lecture to students at the University of Córdoba
コルドバ大学で学生に講義を行う内藤主任研究員

SATREPS(地球規模課題対応国際科学技術協力プログラム) アルゼンチンプロジェクト「気象災害に脆弱な人口密集地域のための数値天気予報と防災情報提供システム」において、令和 6 年 7 月 29 日 か ら 8 月 9 日の 12 日間に行われた合同調整会議、研究会合、ワークショップ及び現地調査に参加するため、アルゼンチンに出張しました。このプロジェクトは、5 年間で気象観測システムの高度化、現地観測データを同化した数値予報の開発、洪水予測システムの開発、警戒情報伝達システムの開発などを行い、ブエノスアイレス市とコルドバ市の洪水氾濫多発地域の被害軽減を行うもので、今年は 3 年目にあたります。ICHARM は洪水予測システムの開発を担当します。今回の渡航では、洪水対策対象地域である 2 つの都市の河川や下水道システムの視察を行い、降雨流出氾濫モデルの構築に必要な河川断面等の情報の収集の他、観測設備の改善状況を把握しました。

7 月 30 日に、ブエノスアイレスの Sant Domingo 川流域に設置された新規水位計の視察を行いました。最下流では、ラプラタ川からの逆流が確認され、この現象がポンプ場の排水に影響を与えていることが判明しました。従来の降雨流出氾濫モデルでは潮汐の影響が無視されていましたが、新規に観測された水位データを元に水文モデルを改善する予定です。ポンプ場は、内水氾濫が発生した場合にも、強力なポンプで迅速に排水が行われる仕組みが確認され、都市部の洪水被害軽減に重要な役割を果たしていることがわかりました。その後、最上流に位置する洪水調整池の視察を行い、水位計の設置状況を確認しました。上流からの水位変化を捉えることで、洪水予測モデルの精度が向上し、流域全体の水文動態を正確に把握することができるようになります。これらの情報は、今後のシミュレーションの開発において重要な役割を果たすことが期待されます。

さらに、7 月 29 日から 8 月 1 日にかけて行われた研究会合では、プロジェクトの各分野での進捗状況が報告されました。都市域における水文モデルの精度向上に向けた議論も活発に行われ、今後のシミュレーション結果のさらなる向上が期待されます。

また、本渡航中、ICHARM からは、牛山朋來主任研究員による日本のダム運用の概略説明（コルドバ州インフラ・公共サービス省）、玉川勝徳専門研究員による大井川上流域におけるアンサンブル流入量予測を用いた発電ダムの最適運用に関する研究事例の紹介（コルドバ州インフラ・公共サービス省）、内藤健介主任研究員による河川流出計算における H-Q カーブの重要性についての講義（コルドバ大学）、牛山朋來主任

研究員・内藤健介主任研究員・山下大輝研究員・玉川勝徳専門研究員による一般学生向けの水文学短期コースでの講義（ブエノスアイレス大学）を行いました。特に、コルドバ州インフラ・公共サービス省での発表に関しては、ダム運用に関する操作規則がないコルドバ州において、今後ダム操作規則を作成する上で参考になったとして大いに期待されました。

The team members participated in a research meeting held from July 29 to August 1. Local researchers reported progress in each area of the project, and the participants actively discussed ideas to improve the accuracy of the hydrological models designed for urban areas. The meeting was fruitful for further improvements in future simulations.

During this trip, the ICHARM members gave presentations at different occasions. At the Infrastructure and Public Services Ministry of the State of Córdoba, Ushiyama provided an overview of dam operations in Japan, and Tamakawa presented a case study on the optimal operation of hydroelectric dams in the upper Oi River basin in Japan using ensemble inflow forecasts. Naito lectured about the importance of H-Q curves in river runoff calculations at the University of Córdoba. All four members conducted a short course on hydrology together for students at the University of Buenos Aires. The presentations at the ministry of the State of Córdoba were particularly well-received for providing practical information to develop reliable dam operation regulations, which are not yet established in the State of Córdoba.

(Written by YAMASHITA Daiki)

Contribution to an e-learning session held in Davao, the Philippines
フィリピン・ダバオ市における e-learning への貢献

2024 年 8 月 30 日にダバオ市で開催されたダバオ知の統合オンラインシステムのトレーニング研修に ICHARM が招待され、オンラインで講義を行いました。ICHARM はダバオ市においてこれまでも、知の統合オンラインシステム（OSS-SR）を用いたファシリテータ育成を通じて、同地域における災害へのレジリエンス向上のための活動を行ってきました。そして今回の研修は、これまで ICHARM が開催したファシリテータ育成研修を修了したファシリテータが主体となって講義を行いました。ICHARM からは、小池俊雄センター長による開会のあいさつと "Global Perspective on Climate Change" と題した講義を行い、その後宮本守主任研究員と内藤健介主任研究員がそれぞれ OSS-SR を用いた洪水モニタリングと QGIS を用いたハザードマップ作製に関する講義を行いました。研修の終わりには参加者からのコメントを基に、OSS-SR の実装計画が提案されました。提案には明確なターゲットや現行の開発計画との融合の重要さの他 3 点が提示されました。ICHARM は今後も、OSS-SR の開発と実装支援を通じて同地域における水災害レジリエンス向上のために活動して参ります。

ICHARM was invited to give a series of online lectures at the Davao Online Synthesis System Training Workshop, held on August 30, 2024, in Davao City, the Philippines. The workshop was attended by 36 participants from government agencies, academic institutions, and other key stakeholders. It was part of the continuous efforts that ICHARM and counterpart members in Davao City have been making to enhance resilience and sustainability in the region through fostering facilitators using the Online Synthesis System for Sustainability and Resilience (OSS-SR). This time, most of the lectures were provided by facilitators who had completed the training that ICHARM previously organized. From ICHARM, Executive Director KOIKE Toshio made opening remarks and delivered a lecture titled "Global Perspectives on Climate Change." Later in the workshop, Senior Researchers MIYAMOTO Mamoru and NAITO Kensuke gave lectures on flood monitoring using OSS-SR and how to create flood hazard maps using QGIS, respectively. At the end of the event, the OSS-SR implementation plan was developed based on comments from attendees, addressing specific targets to achieve and the importance of its integration into existing local development plans, along with three other key components. ICHARM will continue contributing to enhancing the disaster resilience of the region by supporting the OSS-SR development and implementation.

Group photo of the lecturers
講師によるグループ写真


Group photo with participants
参加者とのグループ写真

(Written by NAITO Kensuke)

Thesis summaries and comments from graduating doctoral students
博士論文の概要と学生からのコメント

ICHARM started a doctoral program, "Disaster Management Program," in 2010 in collaboration with GRIPS to produce experts who are capable of developing policies on water-related disaster risk management and taking the leadership in implementing them. By September 2024, 20 students graduated from this program.

In this section, three students, who just graduated from the program this September, briefly present their thesis research, along with some reflections on their three years at ICHARM.

ICHARMは、2010年度から政策研究大学院大学（GRIPS）と連携して、水関連災害リスクマネジメントの政策立案と、その実行においてリーダーシップを発揮できる専門家の育成を目的とした博士課程「防災学プログラム」を実施しています。2024年9月までに20名の学生が修了しました。

以下では、今年9月に修了した3名の学生の研究内容を紹介します。

STUDY ON FLOOD HAZARDS WITH SEDIMENT TRANSPORTATION AND ASSOCIATED DAMAGE ASSESSMENT IN THE FLOODPLAIN OF WEST RAPTI RIVER, NEPAL

Narayan Prasad Subedi, Ph.D. in Disaster Management
スベジ　ナラヤン　プラサド　博士（防災学）

In the West Rapti River, the 2014 flood particularly worsened damage to agricultural and community areas. Nepal has initiated the Sikta Irrigation Project, a national pride project on the West Rapti River, aiming to provide irrigation, boost agricultural production, and protect lives and property in the study area (see **Fig. 1**). It is vital to develop countermeasures to protect people and property in the floodplain from hazards like flood inundation and sediment erosion and deposition. This study evaluated flood and sediment inundation phenomena in the floodplain of the channel reach dominated by suspended sediment and discussed the damage to houses, communities, and agricultural areas associated with flood and sediment inundation based on field surveys, numerical simulations, and their results. The field surveys investigated the land use, geography, topography, hydrology, and hydraulics of the study area to validate the simulation model and assess flood damage from the 2014 flood.

Flood and sediment inundation processes were described using a momentum conservation equation for depth-averaged flow and mass conservation equations for suspended and bed sediment in the floodplain. A key challenge remains in accurately evaluating the erosion rate at the boundary between flow and ground surface. However, introducing a sediment saturation ratio into the bed load layer allowed for a better evaluation of erosion rates and channel changes due to sediment erosion and deposition. This ratio contributed to a significant advancement in sediment hydraulics research. In numerical simulations of flood and sediment inundation processes, it is extremely important to determine the upstream boundary conditions for flood flow and sediment supply. Generally, it is considered appropriate to set flood hydrographs and corresponding suspended sediment concentrations as upstream boundary conditions. In rivers with limited flood data, preparing a hydrograph can be challenging. In such cases, studying flood and sediment inundation using constant flood flow discharge and sediment supply conditions is often done, and it can be useful for flood management. Thus, a similarity principle was introduced to translate results from constant flow conditions to those from flood hydrographs while equating sediment volumes in both scenarios. This principle was validated through numerical simulations of the 2014 flood and for constant flow discharges (Qp, 2/3Qp, and 1/2Qp, where Qp is the peak discharge). This approach is highly valuable for studying flood countermeasures in rivers with scarce data and contributes significantly to both scientific research and practical disaster management. In addition, computed results, such as inundation depths, sediment erosion depths, and sediment deposition depths for the 2014 flood event, were validated using field survey data (see **Figs. 2** and **3**). Based on these field surveys of

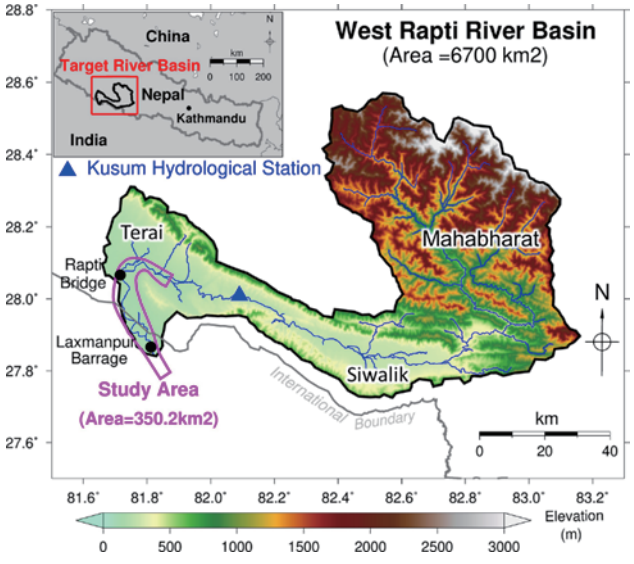


Fig. 1 Topographic map showing the location and channel networks of the West Rapti River basin and its floodplain (Purple Polygon). The blue triangle indicates Kusum hydrological station. The gray line around the floodplain of the basin is the international boundary line between Nepal and India.

houses and agricultural areas (see **Fig. 4**), along with observed recovery times in these agricultural areas, an annual crop production ratio was proposed. This ratio, developed based on the relationship between deposition depth and recovery time, plays a fundamental role in formulating a damage function (see **Fig. 5**). This approach provides a robust framework for assessing and predicting agricultural damage in flood-prone areas.

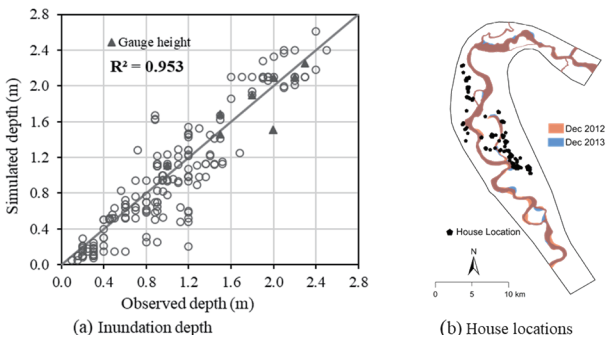


Fig. 2 Comparison between the simulated and observed inundation depths and observed sites illustrated by points.

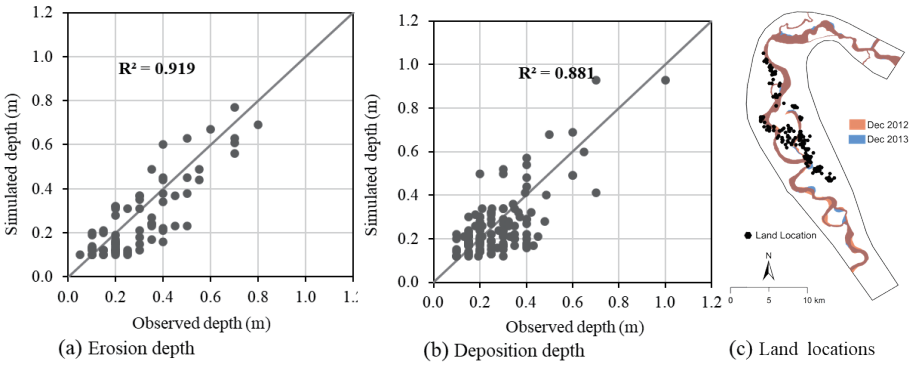


Fig. 3 Comparison between the simulated and observed depths of erosion and deposition depths, and observed sites illustrated by points.

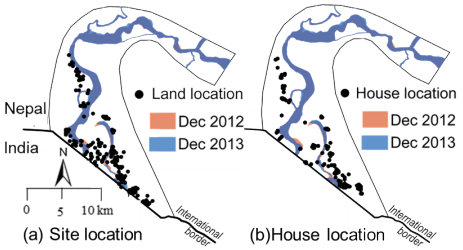


Fig. 4 Observed locations of site and houses for damage assessments

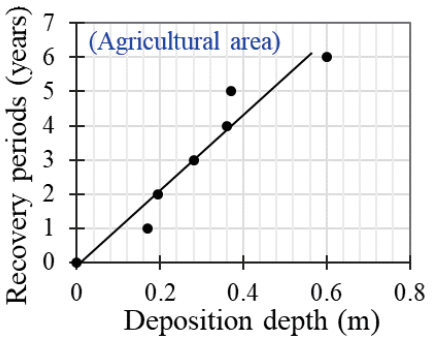


Fig. 5 Relationship between deposition depth and recovery time (years).

Traditionally, flood damage research has focused on crop loss, but the damage to agricultural land caused by sediment erosion and deposition is more severe. It leads to reduced productivity or the loss of farmland itself, which is more critical than just crop damage. Key factors for assessing damage from flood hazards with sediment transport were identified based on damage functions developed from the 2014 flood. The field surveys revealed that parts of farmland and community areas were lost to erosion, with recovery taking years due to sediment deposition; some areas remained unrecovered even after six years. This study emphasizes the importance of incorporating sediment erosion and deposition and channel changes in flood damage assessments, which have traditionally focused on floodwaters alone. In response, a new method was proposed to evaluate sediment erosion and deposition, particularly with large amounts of suspended sediment, and to assess the damage to agricultural land, communities, and houses for floods with return periods ranging from 10 to 200 years.

During my time at ICHARM, I had a lot of experience and learned many valuable things. I would like to extend my sincere gratitude to my esteemed supervisor, Prof. Shinji Egashira, for his invaluable guidance, unwavering support, and profound mentorship throughout this research endeavor. In addition, I am deeply grateful to my sub-supervisors, Prof. Atsuhiro Yorozuya and Prof. Miho Ohara, as well as Prof. Toshio Koike and Prof. Takeyoshi Chibana, for their invaluable guidance. In addition, I am deeply grateful to all the researchers, administrative staff, and friends at ICHARM, who supported me in achieving my goals. It has been an honor and a privilege to be the first individual from Nepal to successfully complete a PhD in disaster management through GRIPS and ICHARM.

DEVELOPING AN INTEGRATED APPROACH FOR OPTIMIZING THE CLIMATE CHANGE IMPACT ON WATER AND AGRICULTURE NEXUS IN THE PHILIPPINES: THE CASE OF PASIG-MARIKINA RIVER AND LAGUNA LAKE BASIN

Ballaran Vicente Jr. De Guzman, Ph.D. in Disaster Management
バララン　ビセンテ　ジュニア　デ　グズマン　博士（防災学）

Climate change is increasingly recognized as a critical factor affecting water resources and agricultural productivity globally. In the Philippines, a nation highly vulnerable to climatic shifts due to its geographical location, the impacts are particularly pronounced. The Pasig-Marikina River and Laguna Lake Basin (Figure 1), a vital area for both water supply and agriculture, faces significant challenges as a result of changing climate patterns. The interconnectedness of water resources and agriculture necessitates a comprehensive approach to manage and mitigate these impacts effectively. This study aims to develop an integrated approach to optimize the impact of climate change on the water and agriculture nexus under projected climate change scenarios in the Pasig-Marikina River and Laguna Lake Basin by employing high-resolution climate models, hydrological simulations, and agricultural simulations and productivity assessments.

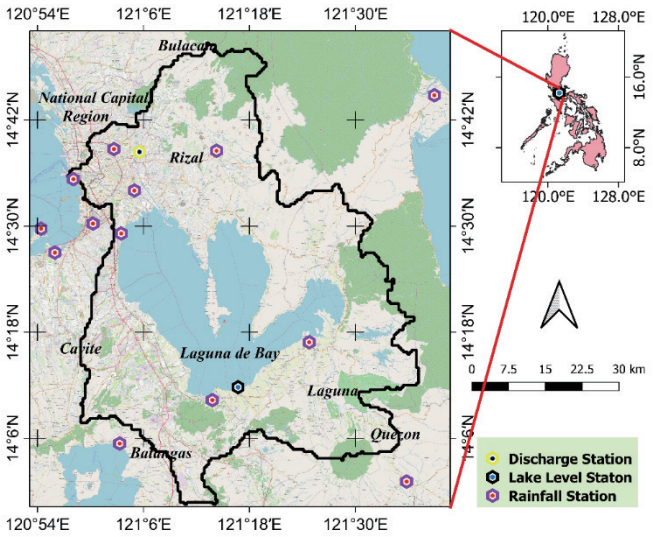


Figure 1: Pasig-Marikina River and Laguna Lake Basin

The dynamically downscaled and bias-corrected MRI-AGCM 3.2S super high-resolution Global Climate Model (GCM) was utilized and input-forced into the Water and Energy Budget-based Rainfall-Runoff-Inundation (WEB-RRI) hydrological model. GCM simulations were performed for both past (1979–2003) and future (2075–2099) climate RCP 8.5 scenarios (severe or business-as-usual scenarios) to analyze the projected shifts in discharge and lake levels within the basin (Figure 2). The results indicate an impending climate shift characterized by several key findings, including an increase in maximum daily discharge, earlier attainment of maximum mean monthly discharge by a month, significant rises in mean monthly discharge in four specific months, and elevated maximum daily lake levels. Additionally, the results point out nearly-tripled flood frequency, prolonged maximum inundation duration, and substantial increases in both maximum flood extent and depth (Figure 3), all of which particularly affect low-lying areas within the basin, especially the rice fields.

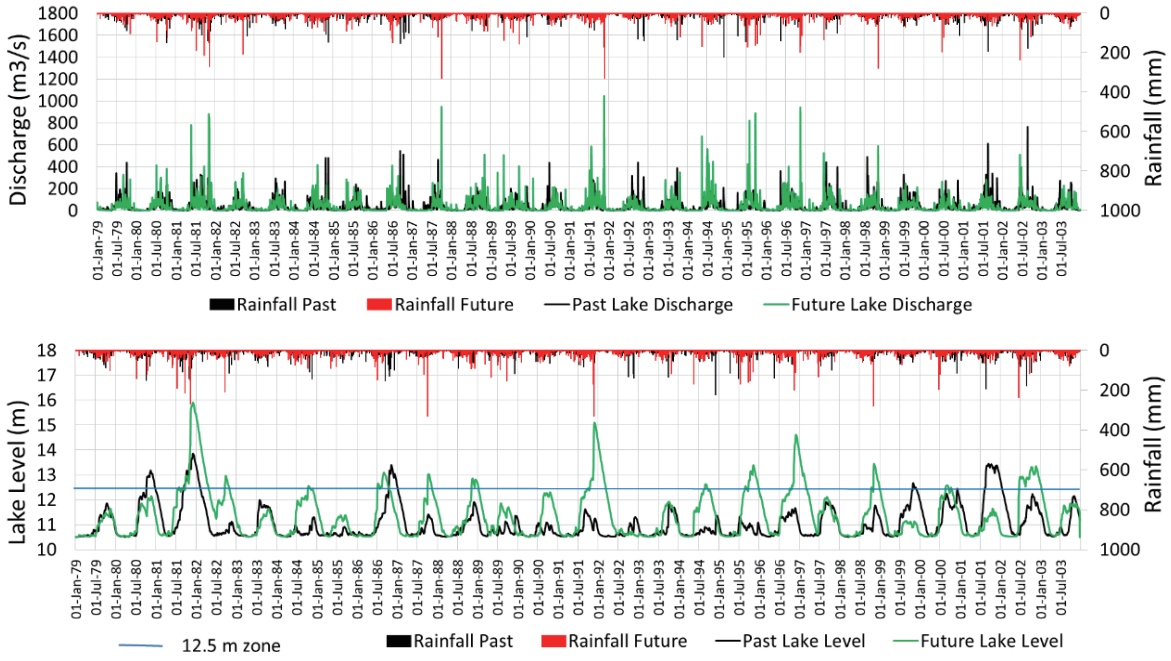


Figure 2: Comparison between past and future climate scenarios for 25-yr daily discharge (top) and daily lake level (bottom).

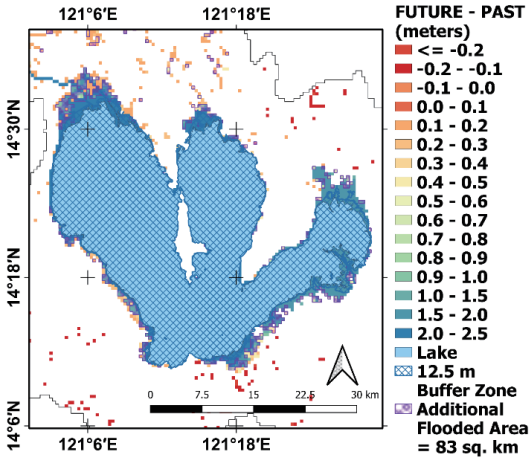


Figure 3: Difference in flood depth between future and past climate scenario.

In linking these generated past and future climate scenarios to agricultural production, the calibrated Crop Growth Simulation Model (SIMRIW) was coupled with the WEB-RRI model. The results show that rice production will be significantly affected, with a potential decline in yields, if no countermeasures are implemented, such as changing the planting dates in order to obtain harvest before floods occur or improve the yield by reducing water stress during dry periods. Moreover, the use of open-source satellite data and UAV image data has proven beneficial in improving the estimation of rice crop damage from flooding events, thereby enhancing the agricultural monitoring system.

The impact of climate change on the water and agriculture nexus can be optimized by integrating these different models (Global Climate Model, WEB-RRI Model, and SIMRIW Model) and the results of satellite data for crop monitoring. The Pasig-Marikina River and Laguna Lake Basin will benefit from policy suggestions, such as building river control structures, using pump stations, adopting adaptive cropping strategies and comprehensive climate policies, and providing training programs for capacity building. This holds crucial implications for policymakers, water resources managers, stakeholders, and researchers in developing climate-resilient strategies amidst evolving hydrological conditions.

My planned three-year stay at ICHARM for the PhD Disaster Management program was shortened to two and a half years, as my first six months were conducted online due to strict Covid restrictions resulting from the final remnants of the pandemic. Despite this setback, I was fortunate to complete my degree, thanks to the excellent guidance and supervision of my advisors: Professor Miho Ohara, Professor Mohamed Rasmy, and Professor Kenzo Hiroki. I will be forever indebted to them, as well as to all the researchers, staff, and fellow students at ICHARM, led by the executive director, Professor Toshio Koike.

A HOLISTIC ANALYSIS SYSTEM TO SUPPORT WATER RESOURCE POLICY DECISIONS UNDER CLIMATE CHANGE

Illangasingha Sanjeewa Punsiri Bandara, Ph.D. in Disaster Management
イランガシンガ　サンジーワ　プンシリ　バンダラ　博士（防災学）

Lack of effective governance and policy-making in climate change adaptation, deficiencies in the application of science and technology to disaster risk reduction (DRR), and economic and financial considerations provide substantial obstacles to tackling climate change in numerous nations. Comprehensive global agendas have been formulated to address these issues, with the goal of improving disaster resilience and building a sustainable society by using state-of-the-art scientific knowledge. By integrating these global priorities, this research proposes a holistic framework that enhances disaster resilience while promoting sustainability.

A novel approach (Figure 1) is introduced to quantify the uncertainty of General Circulation Models (GCMs) when applied at local and regional scales. To address uncertainties related to models, climate zones, and temporal changes in decision-making, five key principles were introduced: 1) The climate models used for decision-making should accurately represent the current regional climate; 2) Implementation of downscaling and bias correction for local-scale GCMs; 3) Identification of climatic sensitivity in models; 4) Understanding discrepancies among model outcomes; and 5) Ensuring models can address diverse environments for the utilization of GCMs at the regional or local scale.

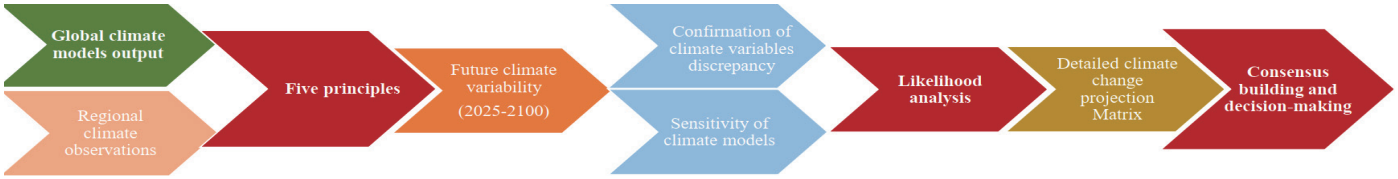


Figure 1. Framework for climate models employed in decision-making

Additionally, the research presents a seamless method for assessing climate change impacts on water availability and agricultural resilience through integrated hydrometeorological indices based on five novel guiding principles. New methodologies for quantifying uncertainty and assessing paddy drought damage are introduced, particularly in

areas where prior data on drought risk management is scarce. The study also recommends leveraging existing water storage infrastructure for inter-basin water sharing to mitigate the effects of climate change on floods and droughts.

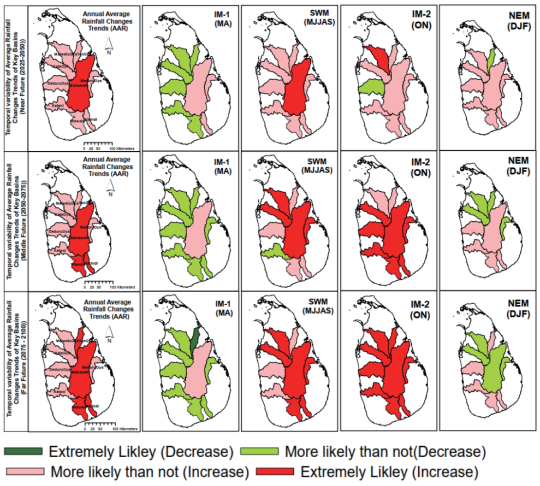


Figure 2. Future seasonal and annual precipitation likelihood trends

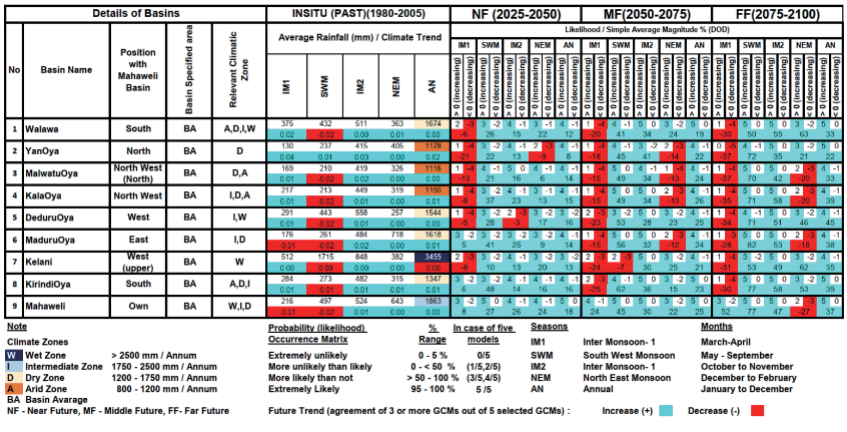


Figure 3.Color coded climate change Matrix—(C4 Matrix)
Sources: https://doi.org/10.1016/j.jhydrol.2023.130213

The applicability of these approaches was tested in diverse regions of Sri Lanka (Figure 2). A meteorological assessment using reliable GCMs identified climate change signals to inform decision-making (Figure 3). The GCM outputs were used to project river flows in eight basins with the Water Energy Budget-Rainfall-Runoff model (WEB-RRI), which showed acceptable performance based on the Nash-Sutcliffe Efficiency (NSE) coefficient. Based on WEB-RRI outputs, short- and long-term climate risks—such as floods, hydrological droughts, and agricultural droughts—were identified for each basin. Projected impacts include flood and drought damage to paddy fields, human settlements, and permanent infrastructure.

The analysis found that northern basins face increasing water stress during some seasons, alongside growing flood damage risks throughout the 21st century. Water coverage for northern demand sites, without inter-basin connections, was assessed using the coupled WEB-RRI and Water Evaluation and Planning (WEAP) model. The results indicated that without diversions, these basins would face frequent drought conditions. However, when evaluating the current diversion system under future flow projections, it was found to be sustainable. Additionally, the expansion of the system proved to add further economic benefits, demonstrating that water-sharing systems enhance societal resilience even under climate change scenarios.

This approach provides valuable data for local and regional decision-making, offering a seamless framework to assess climate change impacts on water and agriculture resilience using GCM outputs. The integration of hydro-meteorological indices, new drought damage evaluation tools, and inter-basin water-sharing strategies improves resilience to risks and damages. This developed approach is globally adaptable to diverse climatic and socio-economic contexts, including countries like India and Pakistan. It provides a comprehensive framework for assessing climate change impacts on water and agriculture, enhances drought resilience, and optimizes resource management through inter-basin water sharing.

During my three years at ICHARM, I had warm support from lecturers, researchers, staff, and friends, all of whom played a significant role in helping me reach my goals. I am extremely grateful to my supervisor, Prof. Toshio Koike Sensei, for his invaluable guidance despite his busy schedule, and to my co-supervisors, Prof. Mohamed Rasmy Sensei and Prof. Kenzo Hiroki Sensei, for their unwavering guidance. From the moment I arrived, ICHARM provided a nurturing environment, with highly skilled academic staff, state-of-the-art facilities, and practical experiences across Japan. The community-oriented atmosphere made me feel at home, and events like ICHARM Day and the cherry blossom festivals enriched my cultural experience. The consistent support, mentorship, and conversations from professors, staff, and international students ensured both my academic progress and personal well-being. ICHARM's "Sontoku" statue deeply moved me, symbolizing kindness, mutual support, and humanity—values that have shaped my journey here. To me, ICHARM embodies the spirit of our Sensei, Prof. Koike, whose wisdom and leadership have profoundly influenced my growth. His guidance will stay with me always. Through Sensei's remarks at the Sakura festivals, I learnt to understand the deeper meaning of the cherry blossoms, symbolizing cooperation, unity, and the fleeting beauty of life—a powerful reminder to live fully in the present moment. These three years, every day has been a new adventure, and I've cherished every moment here. I have truly fallen in love with the dynamic environment at ICHARM and PWRI.

Training & Education

https://facebook.com/icharmtrainingcourse/

Educational program updates
教育・研修活動報告

8 月 26 日：IISEE ／ ICHARM 合同発表会

土木研究所（PWRI）にて、今年で 4 回目となる ICHARM と建築研究所国際地震工学センター（IISEE）の合同発表会を行いました。ICHARM と IISEE は、JICA および GRIPS と連携して、防災にかかる修士課程教育を開発途上国の行政官等を対象に実施しています。今回はそれぞれ 3 名の学生が選抜され、ICHARM からは、Ms. Tanjung Luthfi Azizah（インドネシア）、Mr. MARKANDU Mauran（スリランカ）、Ms. EL HAMRI Fatima Ezzahra（モロッコ）が、各自の研究発表をしました。発表会には、GRIPS の先生方も参加されました。研究分野の違う発表を聞くよい機会となりました。

閉会のあいさつで小池センター長より、①コモナリティー (地震と水災害と事象は違うが、災害対応など共通する部分はお互いが学び合うべき)、②ダイバーシティ、③フェローシップの重視という本合同発表会の意義が改めて強調されました。

August 26: IISEE/ICHARM Collaborative Research Presentation

The International Institute of Seismology and Earthquake Engineering (IISEE) and ICHARM held the fourth Collaborative Research Presentation for master's students at the Public Works Research Institute (PWRI). ICHARM and IISEE, in collaboration with JICA and GRIPS, provide master's degree programs in disaster prevention for government officials from developing countries. The two institutes selected three students each for this occasion. ICHARM selected Tanjung Luthfi Azizah (Indonesia), Markandu Mauran (Sri Lanka), and El Hamri Fatima Ezzahra (Morocco). Professors from GRIPS also joined this event. It was a good opportunity for the students to hear presentations in different research fields.

In his closing remarks, Executive Director KOIKE Toshio told the audience the significance of this joint presentation, emphasizing: 1) commonality (Earthquakes and water disasters are different phenomena, but there are commonalities that people should learn from each other, such as disaster response.), 2) diversity, and 3) the importance of fellowship.

Students of IISEE and ICHARM listening to a presentation
発表を聞く ICHARM と国際地震工学センターの学生

(Written by FUJIKANE Masakazu)

8 月 27 日：東京消防庁本所防災館視察

建築研究所との合同視察初日は、東京消防庁管轄の本所防災館を訪問しました。学生達は、2 つのグループに分かれて、暴風雨・煙・都市型水害・地震体験コーナーにて、それぞれの体験をしました。暴風雨体験では、台風並みの強い雨と風を体験しました。煙体験では、火事の時に煙からどのように逃げるのかを学びました。都市型水害体験では、浸水した際に水圧でドアが如何に重く開けにくくなるのかを学びました。地震体験では、震度 7 レベルの地震の揺れを体験しました。いずれの体験コーナーでも、学生はインストラクターの話をよく聞き、防災についてたくさんの学びを得ることができました。防災を一般の方々に広めようとする日本のこのような活動は、彼らにとって自国で防災行政を推進するためのアプローチの一つとして参考になったことと思います。

8 月 28 日：八ッ場ダムと富岡製糸場視

2 日目は、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副所長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。学生からは、ダム建設に伴い地域住民から理解をえるための取り組みに関する意見、質問がなされました。その後は、八ッ場ダム堤頂部と堤体の内部及び下部を見学し、

August 27: Life Safety Learning Center, Tokyo Fire Department

Master's students currently enrolled in ICHARM's graduate program took a joint study trip to several destinations in the Kanto area on August 27 and 28 with the students of the International Institute of Seismology and Earthquake Engineering (IISEE), housed in the Building Research Institute.

On the first day of the trip, the students from both institutes visited the Life Safety Learning Center of the Tokyo Fire Department. They were divided into two groups and went through several exhibition sections featuring rainstorms, smoke from fires, urban floods, and earthquakes. In the rainstorm section, they experienced intense rains and winds like those caused by a typhoon. In the fire smoke section, they learned how to escape from smoke in case of a fire. In the urban flood section, they learned how difficult it would be to open doors under heavy water pressure in case of flooding. In the earthquake section, they experienced an earthquake with the highest intensity of 7 on the Japanese seismic scale. In each section, the students listened intently to the instructors and learned a lot about disaster prevention. These interactive exhibitions at the center are also excellent examples for the students to understand how Japan tries to disseminate the importance of disaster preparedness to the general public. They gained viable ideas from the center's efforts to promote disaster management policies in their countries.

At Tokyo Fire Department
東京消防庁

August 28: Yamba Dam and Tomioka Silk Mill

On the second day, the students visited the Yamba Dam in Gunma Prefecture. At the

dam management office, they first received a lecture from the engineering deputy director of the Tone River Dams Integrated Control Office, who spoke about the history, construction, and importance of the Yamba Dam to the people in the area. The students made comments and asked questions regarding long-term efforts to gain an understanding of the local community about the construction of the dam. They also had an opportunity to take a close look at the structure of the dam by taking a tour from its top to bottom.

Among the dams in the upper Tone River area, the Yamba Dam plays a vital role in preventing disaster damage in times of floods and heavy rainfalls caused by typhoons and supplying water for Gunma and other downstream prefectures. This multipurpose dam is also used to generate electricity and maintain the normal flow to ensure the functions of the downstream rivers.

After the Yamba Dam, the students visited the Tomioka Silk Mill, a world heritage, in the same prefecture. Local English-speaking guides showed them around the main spots at the site while explaining the mill's historical and cultural backgrounds. After a long isolation from foreign countries, Japan's main export was raw silk. However, raw silk production was painfully hard work for female workers. In 1872, the government decided to build a mill in Tomioka as a model factory equipped with Western silk-reeling machines to produce quality raw silk, increase productivity, and ensure the safety of workers, especially female ones. The plan was also aimed at training technical supervisors. The students were deeply impressed by the then government's forward-looking approach to improving the working environment, even though the country was still at the very early stage of modernization.

At Yamba Dam
八ッ場ダム

At Tomioka Silk Mill
富岡製糸場

(Written by NAKABAYASHI Hideaki)

ダムの構造を間近で見る機会を得ました。

八ッ場ダムは、利根川上流域のダムの一つとして、台風等による大雨の際の洪水対策、群馬県をはじめとする下流県に都市用水を供給する役割を担っています。また、発電施設も併せ持ち、さらに下流河川の流水の正常な機能を維持するための容量も確保している多目的ダムです。

その後、群馬県の世界遺産である富岡製糸場を訪れ、学生は地元の英語ガイドの案内で主要スポットを巡り、歴史的・文化的背景の説明を受けました。長い鎖国後における日本の主要輸出産業は生糸でしたが生糸の生産は、女性工員に過酷な作業を強いるものでした。明治政府は、生糸の品質向上、生産量の増加、技術指導者の養成そして女性工員が安全、安心に従事できるよう様々な工夫をこらした西洋式製糸機を備えた全国模範工場として 1872 年に富岡製糸場の設立を決定しました。学生は、発展途上にあった日本において、労働環境の改善を考えていた日本政府の先進性に深い感銘を受けていたようでした。

August 29 & 30: PCM Follow-up Training

On August 29 and 30, master's students participated in the two-day follow-up session of the "Project Cycle Management (PCM)" training, which was held last March. Day 1 started with a lecture by Executive Director KOIKE Toshio to motivate the students to create a quality "Project Design Matrix (PDM)," which was the primary output of this follow-up training. Then, each student worked on a PDM to implement the project that they proposed for their home country in their master's thesis. They also discussed each other's PDM to further improve the product. On the afternoon of Day 2, each student made a presentation on their PDM in front of their fellow students and the teaching and other staff from ICHARM and JICA Tsukuba, who also actively engaged in subsequent discussions. Finally, the executive director wrapped up the training by sharing with the students five essential ingredients for

Students working on their PCM
PCM 研修に取り組む学生

8 月 29，30 日：PCM フォローアップ研修

8 月 29、30 日の 2 日間に渡り、学生は 3 月に実施した「Project Cycle Management」（PCM） 研修のフォローアップ研修に参加しました。事前に小池俊雄センター長より、質の高いプロジェクト立案の動機付けに繋がる講義が行われ、本研修のアウトプットである、各自の修士論文で取り上げたプロジェクトを実施に移すためのプロジェクト計画概要表「Project Design Matrix」（PDM）の作成及び学生相互のディスカッションを行いました。そして 30 日の午後に、各学生は、各自のプロジェクトを母国で実施に移すという PDM について、プレゼンテーションを実施しました。ICHARM 職員や教員スタッフそして、JICA 筑波の方も傍聴され、活発な議論や意見交換が行われました。終了のあいさつの中で小池センター長より、プロジェクトの現地での実現のために重要な点として、①ラショナーレ、②ター

ミノロジー、③コーディネーション＆コラボレーション、④コンクリート・プロシージャ、⑤ダイバーシティであるとのお言葉がありました。

realizing projects: 1) rationale, 2) terminology, 3) coordination and collaboration, 4) concrete procedures, and 5) diversity.

(Written by FUJIKANE Masakazu)

9 月 9 日：植樹セレモニー開催

ICHARM では 2014 年より、修士課程・博士課程を修了する学生が、修了前に桜の植樹式に参加することが恒例になっています。桜の苗木は 3 月に ICHARM 敷地内に植えられ、約半年間成長していました。そこに学生たちが 2024 年修了生の記念プレートを立てました。プレートを設置した後、江頭進治研究・研修指導監より「桜は毎年 3 月下旬から 4 月上旬に開花しますが、それは日本では別れと出会いの季節です。この桜は、皆さんが ICHARM から旅立つことと ICHARM で活躍されたことをお祝いするために植えたものです。ICHARM のスタッフは時代とともに変わっていきますが、この桜の木はいつもここにいて皆さんのことを祈っています。皆さんがいつかまたここを訪れ、ICHARM で過ごした日々や出会った仲間を思い出し、ICHARM がどのように成長したかを見てほしい」というお言葉をいただきました。来年 4 月、2014 年から 2024 年の修了生が植樹した桜の写真を Alumni facebook page* に掲載予定です。お楽しみに！

* https://facebook.com/icharmtrainingcourse/

September 9: Commemorative sakura tree planting ceremony

Since 2014, it has been a tradition at ICHARM for students graduating from the ICHARM master's and Ph.D. programs to participate in a sakura (cherry tree) planting ceremony before graduation. This year, the ceremony was held on September 9, and the Class of 2024 placed a commemorative plaque on their sakura tree, which was planted near ICHARM's building last March and has been growing for about half a year. After that, Research and Training Advisor EGASHIRA Shinji told the graduating students: "Sakura blossoms bloom every year from late March to early April, which is the season of farewells and new encounters in Japan. This sakura was planted to celebrate your departure from ICHARM and great achievements here. ICHARM's staff may change over time, but this tree will always be here to wish you well. I hope that one day you will come back and remember the days you spent and the friends you made at ICHARM, as well as see how ICHARM has grown." The ICHARM training team plans to post photos of the blooming sakura trees planted by the 2014-2024 graduates on the Alumni Facebook* in April 2025.

* https://facebook.com/icharmtrainingcourse/

Graduating students with their sakura tree
桜の木とともに集合写真

(Written by HASEGAWA Akiko)

9 月 10 日、11 日： 第 17 期 ICHARM 修士課程卒業式

2024 年 9 月 10 日、JICA 筑波において、ICHARM 第 17 期修士課程「防災政策プログラム水災害リスクマネジメントコース」の閉講式が執り行われました。バングラデシュ、ホンジュラス、インドネシア、モロッコ、パキスタン、フィリピン、東ティモールから 1 名ずつ、マラウイ、スリランカから 3 名ずつの計 13 名の学生がプログラムを修了しました。JICA、GRIPS、ICHARM の三者で運営しているこの 1 年間の修士課程プログラムは、自国の政府機関で水や河川の管理に関連した実務経験を持つ人を対象に設計されています。式では高橋亮 JICA 筑波所長と小池俊雄 ICHARM センター長、片山耕治 GRIPS 教授から祝辞が述べられました。修了証書授与の後にはバングラデシュのタバッスム・コシュノール氏が学生を代表して答辞を述べました。式では 2 つの賞も授与されました。学業と研究成果を称える最優秀

September 10 & 11: Graduation ceremony of the 17th ICHARM master's program

The closing ceremony of the 17th ICHARM master's program, "Water-related Disaster Management Course of Disaster Management Policy Program," was held at JICA Tsukuba on September 10, 2024. Thirteen students from nine countries graduated from the program; one each from Bangladesh, Honduras, Indonesia, Morocco, Pakistan, Philippines, and Timor-Leste, and three each from Malawi and Sri Lanka. This one-year master's course, operated by JICA, GRIPS, and ICHARM, is designed primarily for those who have work experience related to water or river management at governmental agencies in their countries. In the closing ceremony, JICA Tsukuba Director General TAKAHASHI Makoto, ICHARM Executive Director KOIKE Toshio, and GRIPS Professor KATAYAMA Koji gave a congratulatory speech. Following the presentation of the certificates, Ms. TABASSUM Khoshnoor of Bangladesh spoke in return on behalf of the students. The ceremony also presented two awards: the Best Research Award to

Ms. El Hamri receiving the Sontoku Award from Executive Director Koike
エル・ハムリ・ファティマ・エッザーラ氏への尊徳アワードの授与

Mr. MARKANDU Mauran of Sri Lanka and Ms. AZIZAH Tanjung Luthfi of Indonesia to praise them for their excellent research work and academic performance, and the Sontoku Award to Ms. EL HAMRI Fatima Ezzahra of Morocco for her outstanding contribution to the class throughout the program.

The next day, September 11, a graduation ceremony was held at GRIPS. The master's students had an opportunity to wear a graduation gown and hat in advance of the ceremony and have memorial photos with students graduating from the International Institute of Seismology and Earthquake Engineering (IISEE). At the graduation ceremony, Ms. El Hamri also received the Dean's Award for academic excellence.

The staff at ICHARM wish the graduates all the best in their endeavors.

Students and guests after the closing ceremony at JICA Tsukuba
JICA 筑波閉講式後の学生と参列者

Graduating students of ICHARM and IISEE with faculties (front row) at GRIPS
GRIPS にて国際地震工学センターの学生と記念写真を撮る卒業生たち

(Written by KOBORI Kosaku)

研究賞はスリランカのマルカンドゥマユラン氏とインドネシアのアジザ・タンジュン・ルトゥフィ氏に贈られ、プログラム全体を通してクラスに最も貢献した尊徳賞はモロッコのエル・ハムリ・ファティマ・エッザーラ氏に贈られました。

翌日の 9 月 11 日には GRIPS において学位記授与式が開催されました。修士学生たちは式に先立って卒業式用のガウンと帽子を着用し建築研究所国際地震工学センター（IISEE）の学生らと記念撮影をしました。学位授与式においては、モロッコのエル・ハムリ・ファティマ・エッザーラ氏が成績優秀者として Dean's Award を受賞しました。

ICHARM スタッフ一同、卒業生の益々のご活躍を心よりお祈りしております。

Thesis summaries and comments from graduating master's students
研究論文13件と修士課程研修生のコメント

In this section, 13 students, who just graduated from the master's program this September, briefly present their thesis research, along with some reflections on their one year at ICHARM.

修士学生13名がこの1年間で完成させた修士論文の概要と、コース全体の感想についてご紹介します。

NUMERICAL ANALYSIS OF FLOW PATTERN AND MORPHOLOGICAL CHANGES IN TIDAL REACH OF SANGU RIVER, BANGLADESH

TABASSUM Khoshnoor, from Bangladesh
Assistant Engineer / Design Circle - 7 / Bangladesh Water Development Board

The Sangu River experiences significant riverbank erosion each year, driven by seasonal flood discharges and tidal currents from the Bay of Bengal. This erosion results in the shifting of the bank line, the migration of settlements, and threats to agriculture and vital infrastructure. This study aimed to investigate the effects of sediment transport, accelerated by high-velocity flows, on the river's morphological changes, particularly in the downstream section, and to

assess the impact of proposed countermeasures to reduce riverbank erosion. A 2-D depth-averaged model for flow and bed deformation was applied to evaluate these morphological changes and calculate the extent of riverbank erosion and deposition. The results from numerical computations suggest that spiral currents at meandering bends, driven by accelerated river flow during flash floods and tidal events, are significant contributors to riverbank erosion. Elevated shear stress during neap tides leads to significant erosion, which can be exacerbated by flood discharge. Implementing countermeasures that reduce the flow path has been found to be effective in decreasing flow strength and, consequently, reducing riverbank erosion in affected areas. This study provides valuable insights that may assist policymakers in developing effective strategies for flood management and riverbank erosion control, contributing to sustainable development in the region.

Keywords: Sangu River, Morphological Changes, Riverbank Erosion, iRIC, Sediment Transportation.

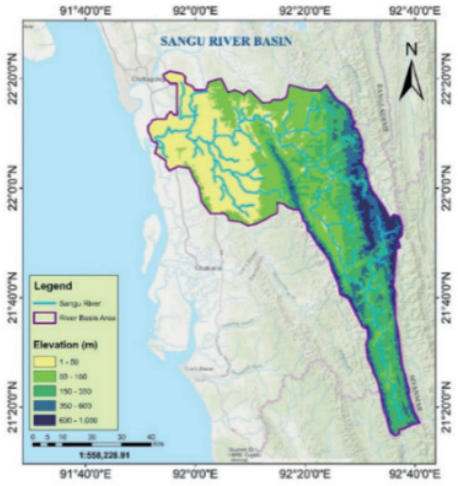
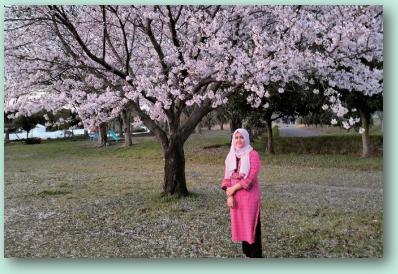
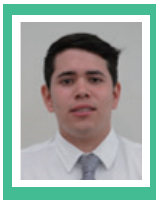


Figure 1. Study area (Sangu River basin)

The master's course at ICHARM has been an extraordinary journey, combining academic growth with personal development. The dynamic research environment, along with seminars and workshops, provided numerous opportunities for networking and deepened my knowledge through collaboration with peers from diverse backgrounds. Practical experiences, such as field trips and workshops, bridged the gap between theory and practice, enhancing our skills and preparing us for complex future challenges. The exceptional courses equipped us with advanced strategies for flood management, while observing Japan's disaster management practices offered invaluable insights. Reflecting on the past year, I feel a deep sense of accomplishment and gratitude. One of the highlights of this journey has been the interactions with other participants from diverse backgrounds, cultures, and nations. We shared experiences and common goals and formed wonderful friendships. Beyond the academic knowledge gained, the journey provided a profound insight into the rich tapestry of Japanese culture and traditions. I am eager to apply this knowledge to address challenges in my home country and beyond. Finally, I wish to extend my heartfelt appreciation to GRIPS, ICHARM, JICA and BWDB for this invaluable opportunity. Lastly, I express my deep gratitude to my supervisors, senseis and staff at ICHARM for their guidance, support and kindness.





STRUCTURAL COUNTERMEASURES PROPOSAL FOR FLOOD DISASTER MANAGEMENT IN THE SULA VALLEY, HONDURAS

CABALLERO FIGUEROA Eduardo Jose, from Honduras
Civil Engineering Project Coordinator / Engineering Department / Centro de Estudios y Desarrollo del Valle de Sula (Center for Studies and Development of the Sula Valley)

Recurring floods in the economically and socially vital Sula Valley of Honduras have caused substantial infrastructure damage and disrupted local livelihoods. This quantitative study developed a comprehensive flood mitigation strategy by analyzing historical precipitation data and employing the Rainfall-Runoff-Inundation (RRI) model. Frequency analysis revealed the 1998 rain event as the highest, with 2 to 10-year return periods. The calibrated and validated RRI model simulated 40- to 200-year flood scenarios, finding that peak discharges for the 50-, 100-, 150-, and 200-year cases exceeded the overflooding threshold at the Santiago Station, suggesting significant flooding.

To mitigate the risk, the study proposes constructing a new dam at a suitable 8,628 km2 upstream location, alongside the existing Francisco Morazan Hydroelectric Dam, using a constant-volume discharge method to manage overflooding for the 50- to 200-year return period events. Cost-benefit analysis showed that dams targeting higher return periods (100-, 150-, 200-year) provide greater overall benefits, despite higher upfront costs. The findings indicate that the proposed dam construction is economically feasible and effective in enhancing the Sula Valley's resilience against extreme rainfall events, providing a framework applicable to other flood-prone regions.

Keywords: Flood Mitigation, Feasible Structural Countermeasures, Hydrological–Hydraulic Modeling, Flood Risk Assessment, Numerical Simulations

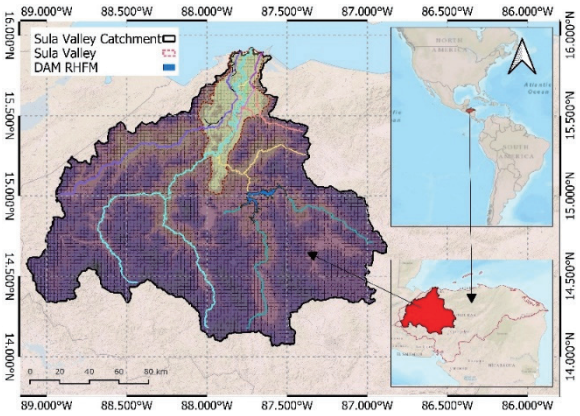


Figure 1. Sula Valley location and catchment features

As I conclude my one-year master's program, I can confidently say that this experience has profoundly impacted my life. This journey has been rich with opportunities that have fostered both my academic and personal growth. The curriculum challenged me to engage in critical thinking and innovative problem-solving, emphasizing the importance of analytical skills that will undoubtedly benefit me in my future endeavors.

One of the standout features of this program has been the vibrant community of students from diverse backgrounds and cultures. Our shared goal of personal and professional development created an environment where we could learn from one another and expand our perspectives on global issues. The practical experiences, including field trips, workshops, and seminars, enabled us to apply theoretical knowledge in real-world contexts, equipping us with the skills and confidence needed to tackle complex challenges ahead.

Looking back on this transformative year, I feel immense gratitude and accomplishment. I have grown in unexpected ways, formed lasting friendships, and gained the readiness I aimed for in my career. I would like to extend my heartfelt thanks to Honduras, the Japan International Cooperation Agency (JICA), the International Centre for Water Hazard and Risk Management (ICHARM), and the National Graduate Institute for Policy Studies (GRIPS) for their support in my pursuit of a master's degree in Disaster Management Policy (DMP) with a focus on 'Flood Disaster Risk Reduction.' Most importantly, I want to express my sincere appreciation to my God, Jesus Christ, for this incredible blessing and for watching over me every step of the way.

Investigating the Effectiveness of the Present & Future Flood Management Approaches in an Interbasin River Network: The Case of Seluna River System, Indonesia

AZIZAH Tanjung Luthfi, from Indonesia
Water Resources Junior Engineer / Directorate of Rivers and Coasts / Ministry of Public Works and Housing

Flood disasters in Indonesia are frequent and devastating because of heavy monsoon rains, rapid urbanization, and environmental degradation. The SELUNA river system is a complex interbasin river network in the Central Java Province that consists of four main rivers. Despite existing flood control measures, SELUNA river system continues to suffer significant flood damage every year because of rapid urbanization and the disturbance of a national road in the downstream area. Therefore, this study examines the effectiveness of existing flood management approaches and presents an end-to-end approach (i.e., climate model outputs, hydrological simulations, damage assessments of crops and buildings, and policy proposals based on evidence-based information) for efficient flood disaster management under climate change. The multi-model GCM results revealed that future annual rainfall will increase by ~4–34% (11.6% on average) under the representative concentration pathway (RCP)8.5 scenario, and extreme rainfall intensity will increase by ~1.3–1.61 (1.46 on average) times. This significant increase in extreme rainfall intensity highlights the heightened risk of flooding in the region under future climatic conditions. Flood simulation and damage assessment showed that the inundation area, housing, and crop land damage will be twofold in the future climate compared to the past climate with existing river diversion facilities from the Serang River to the Juana River. Four scenarios were developed to determine the most effective approach to reduce flood damage. Scenario 3 (i.e., diversion rate of 0.3 with widening channel geometry in the Juana River) shows that high inundation areas (>2.0 m) are reduced by 60%. Scenario 4 (i.e., diversion rate of 0.3 with widening channel geometry in the Juana River and retention pond in the upstream Serang River) shows an 86% reduction in high inundation areas, with affected housing areas decreasing by 89% and cropland by 92%. Based on the evidence-based results obtained in this study, several policies are proposed for mitigating flood damage and supporting sustainable development under climate change conditions in this complex river network.

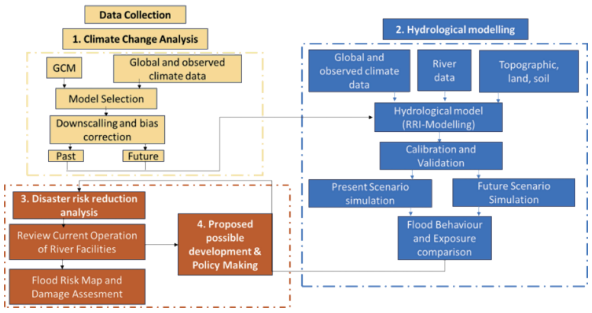


Figure 2 Research Framework

Keywords: Interbasin, SELUNA River System, Climate change, Rainfall-runoff inundation model, Damage Assessment

This past year has been an incredible journey as I pursued my master's degree in the Disaster Management Program at GRIPS and ICHARM. I am deeply grateful to the governments of Indonesia and Japan, as well as JICA, for making this opportunity possible. The program allowed me to learn from Japan's vast experience in handling natural disasters, especially floods. Japan's approach to disaster preparedness and risk reduction has provided valuable insights that I can apply in Indonesia, where managing flood risks is vital.

One of the most meaningful aspects of this journey was studying alongside classmates from various countries, each bringing unique perspectives on disaster management. Despite our diverse experiences and backgrounds, we were united by a shared goal: improving disaster preparedness and risk management in our respective countries. Living and studying with people from around the world opened my eyes to different perspectives and approaches to tackling natural disasters. The discussions we had, the field trips we participated in, and the cultural exchanges we shared enriched my learning far beyond the classroom.

At ICHARM, I gained hands-on experience in flood management, learning from Japan's advanced disaster risk reduction strategies. My time at GRIPS allowed me to develop a strong policy-oriented approach to disaster management, helping me bridge the gap between theory and practice.

As I return to Indonesia, I carry with me not only the knowledge I gained from Japan's disaster management practices but also the lessons I learned from my diverse group of classmates. This experience has deepened my understanding of disaster risk reduction and strengthened my commitment to applying these skills to improve flood management in my own country. I am incredibly grateful for the friendships, knowledge, and memories made during my time in Japan, and I look forward to maintaining these connections as we continue working together to build more resilient communities worldwide.

A NUMERICAL STUDY ON RAINFALL-INDUCED LANDSLIDES AND DEBRIS FLOW HAZARDS IN NKHULAMBE CATCHMENT AREA

KACHIGWADA Ephod, from Malawi
Disaster Response Officer / Response / Department of Disaster Management Affairs

The increased frequency of extreme rainfall events from tropical cyclones has caused flood disasters with landslides and debris flows in Malawi. This study analyzed the landslides and debris flow hazards in Nkhulambe area caused by Tropical Cyclone Freddy in March 2023. A slope stability analysis was conducted to predict landslide occurrences using the Rainfall and Sediment Runoff Model. Furthermore, a 2-D debris flow model was employed to simulate the detailed runout processes, utilizing the predicted landslide areas as the initial condition. Similarly, analyses were conducted using the predicted post-disaster landform to investigate the area's future landslides and debris flow responsiveness to different rainfall conditions. Based on the inferred local soil conditions in this study area, the threshold of accumulative rainfall depth for the landslide outbreaks was estimated to be 105 mm. The future analyses suggested that even small-scale landslides could potentially trigger larger-scale debris flow hazards due to such soil conditions. Moreover, the high-risk debris flow area was identified under different rainfall conditions, revealing the necessity of considering this in future land use planning.

Keywords: landslides, debris flow, rainfall sediment runoff (RSR), two-dimensional debris flow simulation.

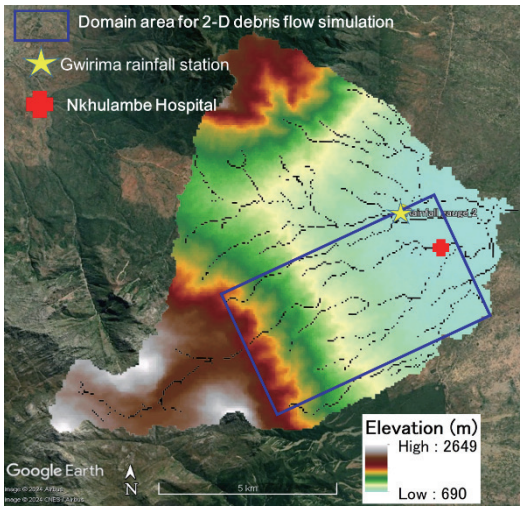


Figure 3. Study area and computation domains

It's time to bid farewell to ICHARM. I am deeply honored to obtain my master's degree in Disaster Management Policy through the collaboration of ICHARM, GRIPS, and JICA. The one-year intensive programme provided a platform for learning Japanese experience in flood control. This course has been an incredible opportunity to connect with new friends from around the world who share similar experiences in managing water-related disasters.

Throughout this program, I had the unique privilege of observing Japan's practical disaster management practices. These included the issuance of early warnings, the development of hazard maps, the conducting of emergency drills, and the implementation of various structural countermeasures, especially flood control dams. These practical experiences have significantly enhanced my understanding of the topics covered in our lectures. The knowledge I have gained will certainly be vital to my work as a disaster response officer upon my return to Malawi.

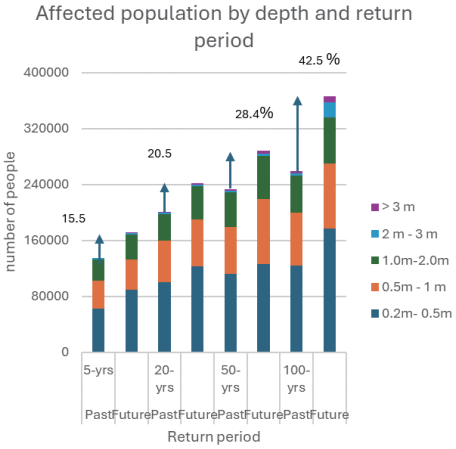
I would like to extend my heartfelt gratitude to the supervisors and researchers for their unwavering support and encouragement throughout this journey. A special thanks to my co-supervisor, Dr. Qin Menglu, for her exceptional guidance and support in navigating complex technical challenges.

Domo Arigato Gozaimasu! /Thank You/ Zikomo

ASSESSMENT OF CLIMATE CHANGE IMPACTS ON EXTREME FLOODS IN RUO RIVER BASIN, MALAWI

NKHATA Romatchinga, from Malawi
Disaster Risk Management Officer / Nkhotakota District Council / Department of Disaster Management Affairs

The Ruo River Basin in southern Malawi, vital for its socio-economic role, faces escalating flood risks escalated by tropical cyclones. This thesis examines the impact of climate change on flood risks and vulnerabilities, focusing on improving hazard mapping and vulnerability assessments. Using advanced hydrological modeling, remote sensing, and the Rainfall-Runoff-Inundation (RRI) model calibration with Sentinel data, the study enhances flood risk evaluation. Bias-corrected General Circulation Models (GCMs) forecast a 29% rise in inundated areas, a 33.9% increase in affected agricultural land, a 38.5% rise in building damage, and a 42.5% greater population risk during a 100-year flood event. These increases suggest significant financial strain on households and the government. The Pressure and Release (PAR) model highlights key vulnerabilities, including land tenure issues, rainfed agriculture reliance, and insufficient early warning systems. The study proposes practical countermeasures, including engineering solutions, community strategies, and policy reforms to improve safety & resilience and align with global sustainability goals.



Damage assessment on population at risk

Keywords: Flood risks, Extreme rainfall, General Circulation Models, vulnerability, countermeasures

Completing this one-year master's course in Flood Disaster Risk Reduction has been an extraordinary journey that has challenged me, inspired me and changed me in every way beyond my expectations. From thought-provoking lectures to intensive research and hands-on field trips, each moment offered a chance to grow, learn, and redefine my capabilities. This program has not only provided me with the technical expertise to tackle complex flood risks but has also instilled in me a profound sense of responsibility to drive meaningful change in flood management and beyond.

The most rewarding part of this experience has been the opportunity to collaborate with a diverse group of professionals from various countries, cultures, and backgrounds, all united by a shared passion for building safer, more resilient communities. Our collective commitment to understanding and mitigating flood risks fostered a unique learning environment where our varied perspectives and experiences enriched our understanding of global issues. These insights have highlighted the importance of diverse viewpoints in crafting innovative solutions for disaster risk reduction.

I am deeply grateful to the International Centre for Water Hazard and Risk Management (ICHARM), the Japan International Cooperation Agency (JICA), the National Graduate Institute for Policy Studies (GRIPS), and my home government, Malawi. Your dedication to empowering individuals through education has profoundly transformed not only my career but also my outlook on life. As I reflect on this past year, I do so with immense pride and gratitude, knowing that the knowledge, skills, and connections I have gained will serve as a solid foundation for my future endeavors. I leave this program not only with a degree but with a renewed sense of purpose and a commitment to making a positive impact in the world. To everyone who has been part of this incredible journey, thank you for your unwavering support, encouragement, and inspiration.

Analysis of Effective Flood Mitigation Measures in the Lower Shire River Basin, Malawi

LONGWE Faith Sekani, from Malawi
Disaster Risk Management Officer / M'mbelwa District Council / Department of Disaster Management Affairs

The low investment and inefficiency of existing structural measure such as Liwonde barrage to control flooding along the Shire River basin of Malawi, have exposed the area to flood disasters. This study focused on proposing effective countermeasures for reducing flood impacts based on a hydrological model and flood exposure assessment. Flood simulations were conducted using a Rainfall-Runoff-Inundation model with and without countermeasures to analyze flood inundation exposure and risk for different return periods using land cover maps, population, and building footprint data. The study findings showed that with the combined use of countermeasures such as two flood storage water dams and embankment, flood inundation area can be reduced from 1101 km2 to 618 km2 and 2017 km2 to 1480 km2 for 5- to 100-year return periods, and the number of affected buildings reduced from 30,380 to 18,716 and 80,454 to 63,093. Decrease in affected population was also confirmed using future projection of 2030 population and current 2020 population data. The study findings recommends that the Malawi government adopt construction of multiple countermeasures to reduce impact of flooding and strengthen resilience in the Lower Shire River Basin.

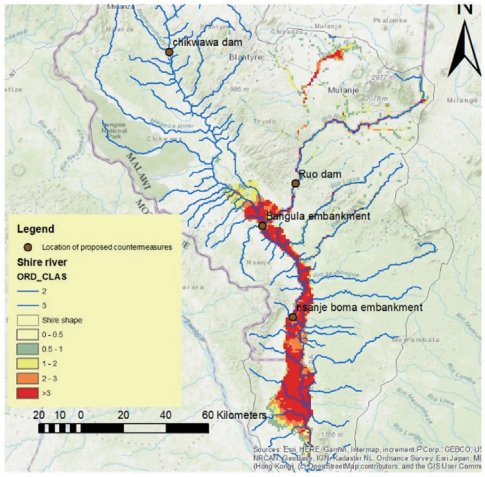
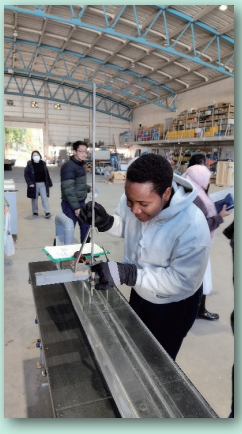
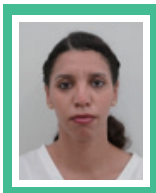


Figure 7: Locations of proposed countermeasures and number of affected building

Keywords: Floods, Inundation maps, Return period, Exposure assessment, Effective countermeasures

I am Faith S Longwe from Malawi. I wish to extend my heartfelt appreciation to JICA for granting me this opportunity for a master's program in Japan. It was a great privilege to pursue a master's degree program in water-related disasters at ICHARM, a world-renowned engineering-based research institute with significant expertise in engineering and management technologies. During my stay in Japan, I learned a lot of new things about disaster management that would help me in my job and personal career. Japan is one of the best-renowned countries that uses scientific knowledge to manage disasters by combining structural and non-structural measures for disaster risk reduction. Using the knowledge and skills that I have gained in Japan on disaster risk management experiences, I will be able to help my country Malawi reduce the impacts of water-related disasters, which have caused significant damage and displacement of people. The opportunity of studying at ICHARM and GRIPS has equipped me with valuable skills and knowledge that will help the Malawi government reduce vulnerability and increase resilience of its people and the environment to disasters by identifying better sustainability strategies. Additionally, I was privileged to learn Japanese culture. I enjoyed visiting many Japanese cultural places and festival events. I was very inspired by learning from Japanese culture on time management, punctuality and hard-working spirit. Lastly, I would like to extend my sincere gratitude to my supervisors, Prof. OHARA Miho, Dr Badri Shresta, and Prof. KATAYAMA Koji, for their knowledge and expertise during my research study.





FLASH FLOODS IN WADI SYSTEMS AND THEIR IMPACT ON INFRASTRUCTURE
A CASE STUDY OF THE UPPER DRAA WADI SYSTEM IN MOROCCO

EL HAMRI Fatima Ezzahra, from Morocco
Engineer / Department of Maintenance and Modernization of Bridges, Division of Bridge Works and Maintenance / Ministry of Infrastructure and Water

Flash floods are the dominant form of flooding in semi-arid areas. They significantly impact the population and livelihoods of vulnerable settlements within Wadi systems. This study aims to evaluate the characteristics of flash floods, including sediment transport and channel changes, in a Wadi system in south-eastern Morocco using the rainfall-sediment runoff (RSR) model and the depth-averaged 2-D model. The basin sediment transport analysis reveals that most erosion and sediment supply occur in the steep slope areas in the northwestern part of the catchment. The 2-D model computation results indicate that while the channel bed is eroded, sediments are deposited on the banks, highlighting the need to implement slope protection and sediment control measures tailored to this context.

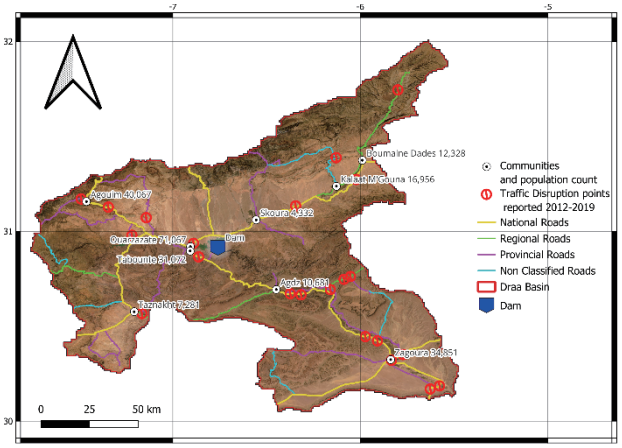


Figure 3: Traffic interruptions due to flash floods.

Keywords: Wadi system, Flash floods, suspended sediment, channel change

My name is Fatima, and I come from Morocco. I am an engineer in the Department of Infrastructure and Water. Before coming to Japan, I had no idea what to expect from this exotic country so far away from anything I had lived in or experienced before. I wanted to challenge myself mentally, physically and culturally by facing this unknown and different world. Now, as the end of the journey is approaching, I look back at this amazing experience that exceeds all that the weak human mind can expect or come up with. In this case, reality was truly much more mind-blowing than imagination.

I feel extremely privileged to be given this opportunity. First, having access to education in Japan helped me to enhance my capacity to think critically and more practically about the problems my country faces. I learned that development and progress is a constant group effort built over time with endurance and stamina, and that without the mindset of constant and steady improvement, no results can be achieved.

This experience in a culture which is deeply different from my own helped illuminate what culture is for me. Just like the Japanese people, we live in our concepts, habits and worldviews; we are aware of some, while not aware of others. However, the experience in Japan showed that a lot of these concepts are not absolute and logical; they are complicated constructs built over time under complicated circumstances and using other imported cultural materials. This is a window of opportunity to deepen our understanding of our shared human experience and to introduce changes that will lead to better human happiness and welfare.

Therefore, I express my deep gratitude, first and foremost, to the people of Japan for having me for one year in their beautiful country, for teaching me innumerable new lessons in life, and for trying so hard to help my country and my people. Then more specifically, I thank ICHARM, JICA, and GRIPS for their practical implementation of these teachings and values during this amazing year.

HYDRO-CLIMATOLOGICAL ASSESSMENT IN THE UNGAUGED CRYOSPHERE OF THE KURRAM RIVER BASIN, PAKISTAN

DIN Salah Ud, from Pakistan
Deputy Director / Pakistan Council of Research in Water Resources / Pakistan Council of Research in Water Resources

To assess the impact of climate change on snow cover and perform a hydro climatological assessment, the Water and Energy Budget-based Distributed Hydrological Model for Snow (WEB-DHM-S) was used in the Kurram River Basin, Pakistan. The climate models were carefully selected from Coupled Model Intercomparison Project Phase 5 (CMIP5). The root-mean-square error and spatial correlation indices were computed for each of the 44 General Circulation Models (GCMs) in the CMIP5 suite. Four GCMs with high total index scores were shortlisted for the Representative Concentration Pathway (RCP) 2.6 and 8.5 scenarios. To calibrate and validate the model in the study area with insufficient ground snow observation data, the Moderate Resolution Imaging Spectroradiometer (MODIS) 8-day maximum snow-cover extent was used. The same was used to determine the historical snow cover area. The results revealed that WEB DHM-S was capable of accurately representing the spatiotemporal distribution of snow cover with statistical indicators, the Nash-Sutcliffe efficiency (NSE) and PBIAS, were 0.68 and -0.8 for the calibration period and 0.67 and -5.81 for the validation period, respectively. All GCM outputs indicated an increase in the magnitude of temperature, with the CNRM-CM5 model projecting a minimum increase of 0.8–1.5°C (RCP 2.6) and the MPI-ESM-LR model projecting a maximum of 5.2–6.6°C (RCP 8.5). Consequently, calibrated models were run for the past (2001–2019) and future (RCP 2.6, 2025–2044, and RCP 8.5, 2081–2100). This finding indicates that snow cover in the basin is expected to decrease significantly in the future. The smallest reductions in snow covered area (SCA) and snow-water equivalent (SWE) are projected to be 16.3% and 21%, respectively, for the CNRM-CM5 model under scenario 2.6 (2025–2044), and the maximum reductions are 75.2% and 78.5%, respectively, for the MPI-ESM-LR model under scenario 8.5 (2081–2100).

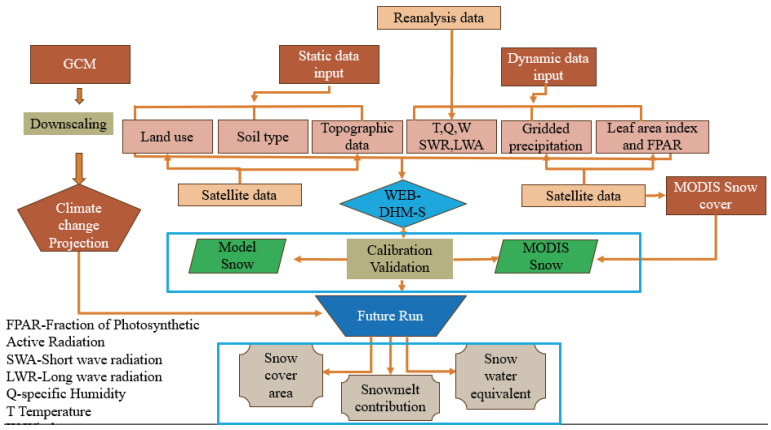


Figure 3. Methodology

Keywords: Kurram river, Snow cover area, Climate Change, WEB-DHM-S, MODIS

I am Engr. Salah Ud Din, currently working with the Pakistan Council of Research in Water Resources under the Ministry of Water Resources.

The program at ICHARM has been nothing short of transformative for me. I came here with expectations, but what I experienced far surpassed anything I could have imagined. The knowledge I've gained from the academic curriculum is invaluable, but what truly moved me was the depth of understanding I've developed through Japan's rich history and its unwavering commitment to disaster management. The field visits were eye-opening, offering real-world insights that have forever changed my perspective.

ICHARM has laid a solid foundation for my future, both theoretically and practically, in flood disaster risk reduction. The skills I've acquired here are not just tools; they are a beacon guiding me forward. My journey in programming and other disciplines is just beginning, and I am determined to build on this foundation, with a burning desire to pursue a Ph.D. to further contribute to this vital field.

I am profoundly grateful to the people who have made this journey so special. The exceptional attitude and unwavering support of the research staff, particularly my supervisor, Professor Toshio Koike, and Dr. Katsunori Tamakawa, have left an indelible mark on me. Their guidance wasn't just academic; it was deeply personal, nurturing my growth in ways I hadn't thought possible.

As I prepare to leave, my heart is heavy with gratitude. I don't see this as the end but rather the beginning of a lasting collaboration between ICHARM and our department in Pakistan. I carry with me not just knowledge, but the spirit of ICHARM, which I will cherish and uphold in all my future endeavors.

Thank you from the depths of my heart for this incredible opportunity. I look forward to what the future holds for us together.

Integrated Flood Risk Analysis for Riverine Community in Chico River Basin, Mountain Province, Philippines

MASKAY Samuel, from the Philippines
Engineer II / Maintenance Section / Department of Public Works and Highways - Mountain Province First District Engineering Office

The upper Chico River, located in mountainous region, frequently overflows during heavy rainfall events, causing rapid flows that threaten the lives of inhabitants, agricultural areas, and essential infrastructure. This study aimed to enhance community resilience to flood risk by investigating the channel capacity, flow pattern, and morphological changes in river using integrated hydrological and hydraulic analysis. A rainfall-runoff inundation model was used to evaluate the discharge from the basin using processed rainfall data (GsMap). The model was calibrated with daily rainfall data, achieving good accuracy (NSCE = 0.94, RMSE = 74.88), and was validated with hourly data. The resultant hydrographs were used as boundary conditions to evaluate the morphological changes in the Chico River using a 2D-depth average model.

The September 2018 Typhoon Ompong was one of the most damaging events for the Chico River, causing severe riverbank erosion and community flooding. This disaster resulted in 6 deaths, 4 injuries, damage to 593 houses, and agricultural and infrastructure losses totaling $14 million (Provincial Disaster Reduction Management Office, Mountain Province). The Chico River was also evaluated for 25-, 50-, 100-, and 400-year return periods.

This study provides key insights, including channel capacity, erosion-prone areas, and which communities, Ab-abtana-Samoki (A), Fagkay-Samoki (B), Eyeb-Pakkil (C), and Lanao-Cheppay (D), will be most affected by extreme events, with Ab-abtana-Samoki (A) at greatest risk. These findings are crucial for proactive flood management to protect lives, property, and infrastructure. This study is a valuable resource for policymakers, planners, and designers to safeguard communities near the Chico River in Bontoc, Mountain Province.

Keywords: Flood risk, Channel Capacity, River erosion, Bed deformation, Flow depth, Flow Velocity

Figure 2: 1933 photo and satellite imagery from of the study area showing the population expansion for the span of 90 years. (A = Ab-abtana-Samoki, B = Fagkhay-Samoki, C= Eyeb-Pakkil, D = Lanao-Cheppay). Flow direction is from left to right.

With deep gratitude, I give thanks to the Almighty, whose grace has blessed my life with this journey. We must cherish every moment, for time is fleeting. Just as we begin to revel in life's joys, we are reminded that all things must eventually come to an end. My time here in Japan has been a gift from God, through Christ who gives me the strength to face challenges. Japan, a land of innovation and technological brilliance, especially in managing water-related disasters, stands as a beacon of admiration. The Disaster Management Policy Program of GRIPS, PWRI, and ICHARM represents the pinnacle of flood disaster management, guiding us toward a sustainable future.

I applaud GRIPS, ICHARM, and JICA for their insightful lectures and field studies, allowing us to witness disaster management in action. Japan's approach offers valuable lessons for our own countries. The wisdom of my professors, along with the support of ICHARM staff, classmates, and colleagues from the Philippines, made this journey both meaningful and unforgettable.

The trust and confidence from DPWH, my family, and friends fueled my perseverance, which was made possible by God's abundant grace. I'm proud to share four key lessons from my time in Japan:

***Spiritual Growth** – Living far from home deepened my faith and reliance on God, sustaining me through every challenge.*

***Flexibility and Adaptability** – Embracing diverse cultures broadened my worldview and opened my heart to new experiences.*

***Humility and Respect** – The humility and respect shown by the Japanese people, regardless of status, taught me the true value of grace.*

***Time Management** – In each fleeting moment lies the power to shape our journey; mastering time is the key to every endeavor. With these lessons in mind, I believe that disaster management is more manageable.*

I am deeply grateful for this once-in-a-lifetime opportunity. May God bless Japan and the Philippines.

ASSESSMENT OF CLIMATE CHANGE IMPACTS ON EXTREME FLOODS AND LAND DEVELOPMENT IN THE KELANI RIVER BASIN, SRI LANKA

JAYAWARDHANA MUDIYANSELAGE Madhura Bandara Jayawardhana, from Sri Lanka
Engineer (Civil) / Research and Design Division / Sri Lanka Land Development Corporation (SLLDC)

This study focuses on the Kelani River Basin in Sri Lanka, which often experiences flooding owing to its geography and topography. This area is particularly at risk because it is close to Colombo, the capital city, and has considerable urban development. With the population expected to double in the next 20 years and the rapid urban growth in the lower basin, prioritizing flood defense in this area is crucial. This study proposes an approach to evaluate how rainfall may change in the future, addressing the limitations of current assessments of infrastructure development that rely on today's climate and land use pattern. It aims to determine flood exposure and potential risk using expected changes in rainfall patterns and land use. These findings suggest that heavy and prolonged rainfall events are expected to increase in the future, thereby increasing the risk of flooding. The study predicted that flooding is likely to worsen, with the percentage of buildings at risk of flooding possibly increasing by 25%, 33%, and 45% for 10-, 50-, and 100-year return periods, owing to climate change and changes in land use. These results provide valuable information for decision-making regarding the future use of land in river basins.

Keywords: Kelani River Basin (KRB); Climate change; land-use land cover (LULC); RRI flood simulation; land use planning

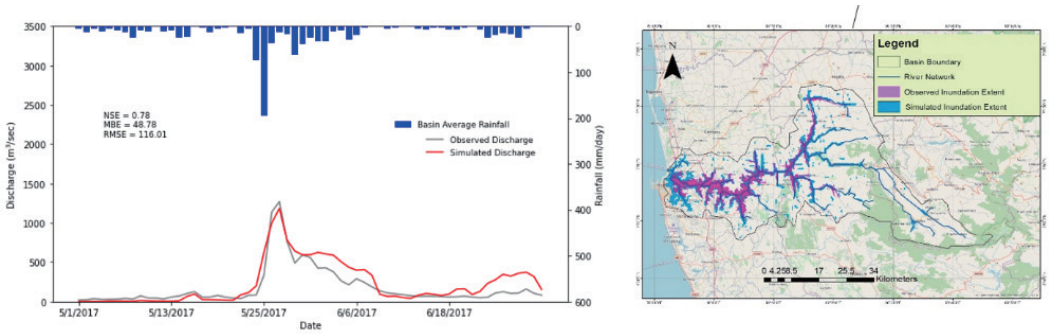


Figure 7. RRI model validation results
(Left- Hydrograph of 2017 extreme event, Right- Flood extent of 2016 extreme event)

My name is Madhura Jayawardhana, and I am from Sri Lanka. I am a civil engineer for the Sri Lanka Land Development Corporation. I am very fortunate to have been a part of this program and to have had the opportunity to explore Japan's cultural heritage and technological advancements. Japan has been my dream country since childhood, and I firmly believe this is where tradition meets the future. This one-year master's course has been an incredible journey that has truly transformed me in many ways.

It's been an invaluable experience with lots of opportunities, each adding to the diverse collection of my academic experiences and personal growth. These experiences honed our skills and gave us the confidence to tackle complex challenges in our future careers. Earning my master's degree in disaster management policy through the collaboration of ICHARM, GRIPS, and JICA has been a remarkable and fulfilling achievement under the expert guidance of Assoc. Professor Miyamoto Mamoru, Professor Mohamed Rasmy and Professor Toshio Koike. This endeavour solidified my capacity to complete my research work successfully.

The knowledge we acquired will prove invaluable when we return to our home countries, as we can apply it to enhance our disaster management systems. I want to extend my heartfelt gratitude to the Japan International Cooperation Agency (JICA), the International Centre for Water Hazard and Risk Management (ICHARM), and the National Graduate Institute for Policy Studies (GRIPS) for allowing me to pursue a one-year master's course on disaster management policy (DMP), focusing on flood disaster risk reduction.

INVESTIGATION OF RIVER-LAGOON-FLOOD NEXUS UNDER CLIMATE CHANGE: THE CASE OF BATTICALOA LAGOON AND CONNECTED RIVER SYSTEM, SRI LANKA

MARKANDU Mauran, from Sri Lanka
Chief Engineer / Engineering Geology / Irrigation Department

Lagoons encompass approximately 13% of the coastline worldwide. They are coastal reservoirs fed by rivers and serve as a natural system to mitigate flooding in coastal areas. However, torrential rainfall events could inundate a lagoon to its capacity, blocking outflow to the sea and causing rivers and lagoons to overflow, thereby exacerbating flood damage in nearby cities (e.g., the 2024 floods in Rio Grande do Sul, Brazil). Additionally, global warming may aggravate these damages because of more frequent and intense rainfall events in the future. Previous studies have mainly focused on rivers when studying floods, ignoring the feedback from the river–lagoon system because of its complex nature. This study proposes a framework to investigate the river–lagoon–flood nexus in the context of climate change in the Batticaloa Lagoon in eastern Sri Lanka. This research implemented an end-to-end (i.e., scientific, engineering, and economic) approach using climate model predictions, a hydrological (WEB-RRI) model, and the pressure and release (PAR) model to provide evidence-based information and suggest policy changes for sustainable disaster management in the Batticaloa district. The results revealed that total annual rainfall and 4-day extreme rainfall will increase under all RCP scenarios. The extreme flood situation will raise the lagoon water level by 0.64m in the future compared to the water extreme level in 2011. Creating new outlets and operating a new reservoir could lower the future lagoon level by 0.92m and reduce the impacted cropland by 3,560 hectares. Currently, no flood hazard map exists for the region or an identified authority for integrated river–lagoon system management. Implementation of the proposed mitigation measures and policy changes will promote sustainable development in the Batticaloa district.

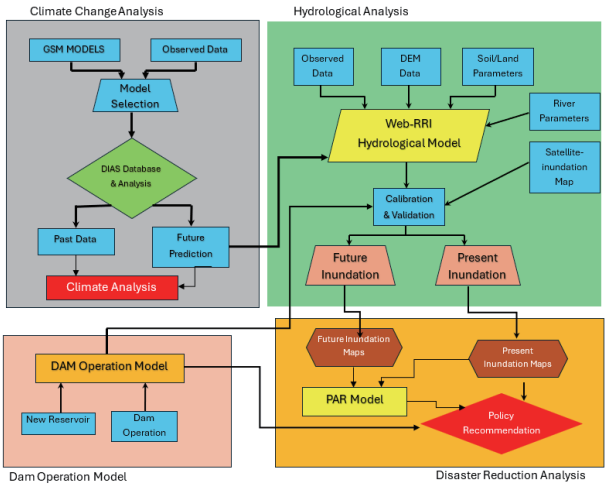


Figure 2: Research framework

Key Words: Climate Change, WEB-RRI, Lagoon, Reservoir operation, PAR model

The International Centre for Water Hazard and Risk Management (ICHARM) lives up to its name by being a truly charming place that fosters scientific talents to address disasters in their own countries. I am grateful for the opportunity to learn and reflect on the disasters in my country. The director and the researchers at ICHARM are dedicated to tackling the world's most pressing challenges using scientific tools. During the program, I had the chance to visit various places and see firsthand the technological advancements in Japan. I learned how the Japanese society works collectively to overcome each disaster. It made me realize how fortunate we are to live in a country that is less vulnerable than Japan. I also discovered that some engineers and scholars who studied in Western countries returned to Japan and applied their knowledge in the early 20th century. Their contributions laid the foundation for Japan's tremendous advancements, ultimately leading to excellent living standards for the people.

I hope that the alumni of ICHARM will continue to involve us in their future development and that we will give our best to our own country. I had a great experience with my batch mates, who taught me diverse thinking and different approaches to each problem. I would like to thank the director of ICHARM and his staff for their support and knowledge in conducting meaningful research for my master's degree. I would also like to express my gratitude to the support staff and academic staff of ICHARM and GRIPS for guiding us through each procedure to achieve our goals on time. Additionally, I am thankful to the JICA staff for their guidance and support throughout our one-year journey. Finally, I am grateful to JICA and the people of Japan for sponsoring my studies in Japan.

A STUDY ON THE IMPLEMENTATION OF THE UN EARLY WARNING FOR ALL INITIATIVE: A CASE STUDY IN THE KATTANKUDY URBAN COUNCIL AREA IN BATTICALOA DISTRICT, SRI LANKA

ABDUL SAMAD Mohamed Ziyath, from Sri Lanka
Assistant Director (District) / District Disaster Managment Unit-Batticaloa / Disaster Managment Centre

Frequent flooding is the most devastating disaster, affecting almost all the population in the Kattankudy urban area. Growing population, limited land area, increasing rainfall events, lack of early warning and poor coping capacity are the major challenges for stakeholders and communities to ensure resilience and adaptation to flood disasters in this region. This study examines the effective implementation of the UN's Early Warnings for All initiative at the grassroots level to ensure that everyone is protected from flood disasters. The UN initiative is built on four pillars (i.e., Pillar 1: Disaster risk knowledge, Pillar 2: Detection, observation, monitoring, analysis, and forecasting, Pillar 3: Warning dissemination and communication, and Pillar 4: Preparedness and response capabilities). This study reviewed displacement data and mapping, and conducted expert interviews, questionnaire surveys and group discussions with key government stakeholders and vulnerable communities to assess disaster risk knowledge, preparedness and coping/response capacities of vulnerable communities. The results of this study showed that about 51% of the population and 42% of the land area are vulnerable to floods. The level of preparedness with the existing Community-Based Disaster Risk Management (CBDRM) system is low, the implementation of regulatory measures for flood mitigation is unsatisfactory, and limited funds and resources to improve mitigation measures. The degradation and encroachment of the natural drainage system (Thona) that passes through the identified vulnerable communities is the major challenge for flood mitigation in the study area. In addition, the community relies heavily on offline means for hazard information. Based on the findings, the study recommends to adopt the concept of "Disaster Resilience and Sustainability by All" and to form an effective CBDRM system with the approval and support from the Disaster Management Centre of Sri Lanka. The proposed system will lead the regular meetings and workshops to enhance community coping/response capacity, support for regular flood mitigation activities (e.g., maintaining the blockage free Thona system and drainage facilities), identification of evacuation centers and food supplies, organized post disaster relief activities, and financial proposals for the improvement of the Thona and drainage system. This study is expected to be an empirical model for other urban areas in the country to effectively response to the flood disasters.

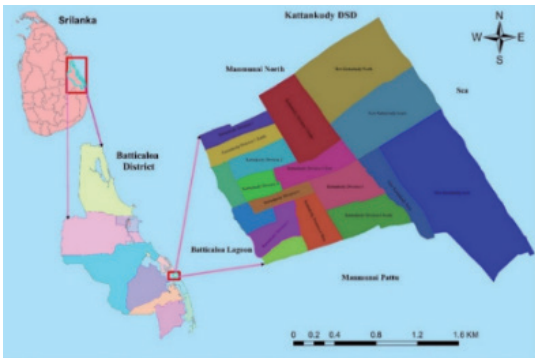


Figure 1. Study area.

Key words: Flood Disaster Risk, Flood Disaster Risk Management, CBDRM, Early Warning for All.

I am ABDUL SAMAD Mohamed Ziyath, the assistant director of the Disaster Management Centre of Sri Lanka, tasked with coordinating the government's disaster management activities at the district level. This master's degree will enhance my capacity to contribute to the government's initiatives to increase the resilience of vulnerable communities to frequent floods. The most updated concepts, knowledge and practices provided by GRIPS and ICHARM in connection with managing water-related disaster management have further encouraged me to serve my country by managing various natural disasters and crises with innovative and sustainable solutions.

The experienced resource persons at ICHARM dedicated themselves to sharing knowledge and providing practices to guide me with the latest research topics and the right directions. Throughout my study period, I had a different experience with the ethics of the teacher-student relationship; it gave me pleasure beyond measure. The learning and living environment associated with students coming from different countries and regions gave me valuable experiences of living in a multicultural environment.

After this education, I have a strong hope and determination that I can work efficiently and effectively for the government of Sri Lanka to implement the UN's world agenda - "Early Warnings for All" and SDGs with the support of key stakeholders and donor agencies.

I thank JICA, which has played a key role by extending all its support to my country, especially in the post-war development in the area of infrastructure, education and health improvements, for increasing my capacity to work for vulnerable communities in Sri Lanka.

IMPACT OF CLIMATE CHANGE ON FLOODING IN THE COMORO RIVER BASIN DILI, TIMOR-LESTE

TELES FERNANDES Simao, from Timor-Leste
Meteorologist / Department of Meteorology / National Directorate of Meteorology and Geophysics

The Comoro River is the main river running through the city of Dili, the capital of Timor-Leste. The Timor-Leste Disaster Database (BDDTL) contains records of severe flooding over the last 20 years, with Dili most affected (Table 1). Flooding is a serious problem in the Comoro catchment area of Dili, Timor-Leste. Every year, floods cause damage to public infrastructure and properties. To investigate the impact of climate change on the frequency and severity of flooding in the Comoro River Basin including the urban areas. Analysis of past and future rainfall using the Global Circulation Model (GCM) to project future climate conditions, three models of GCM indicate a 4% to 19% increase in the average annual precipitation, which is expected to exacerbate flood risk and lead to more frequent and severe inundation events in built-up areas of the river basin in the 25-yr and 50-yr return period. The result from frequency analysis indicates that 25-year and 50-year return periods have an increase of 1.40 and 1.54 times, respectively, and are affected by the built-up in Comoro River Basin, Dili, Timor-Leste by 1.62 sq km and 1.88 sq km from the inundation depth 0.5 m to >1.0 m, although the Comoro River stream would not be overflown in those extreme rainfall events. We recommend implementing countermeasures, such as constructing or rehabilitating the drainage system in urban areas and clean-up the drainage channel to minimize flooding in the future and protect the communities in these catchment areas.

		PAST		FUTURE	
		Return Period 25-year	Return Period 50-year	Return Period 25-year	Return Period 50-year
	Inundation Depth (m)	Area Inundated (km2)	Area Inundated (km2)	Area Inundated (km2)	Area Inundated (km2)
1	0.5 - 1.0	0.039	0.072	1.55	1.73
2	> 1.0	0.018	0.018	0.11	0.15
	Total	0.057	0.091	1.65	1.88

Table 4. Return periods 25-year and 50-year for the past and future inundated areas affect built-up.

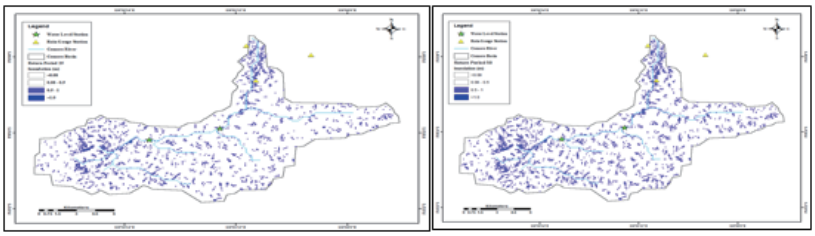


Figure 9. Inundation distribution for the return periods of 25-year (left) and 50-year (right).

Keywords: Climate Change, Flood, RRI model, Inundation Map, Frequency Analysis.

I am Simao Teles Fernandes, a meteorologist working at the National Directorate of Meteorology and Geophysics in Timor-Leste. This one-year master's course has been an incredibly transformative experience, profoundly impacting both my academic and personal growth. The program offered a challenging curriculum that continually pushed me to analyze and innovate, fostering critical thinking skills that will be valuable in any future endeavor. I learned that flood disaster risk reduction management requires a multi-disciplinary approach, and the concepts and aspects of structural engineering, computer programing, modelling, climate change, socio-economics, and general risk management I learned at ICHARM and GRIPS are very important and useful.

One of the highlights of this journey was the opportunity to engage with a diverse cohort of students from various backgrounds, cultures, and life experiences. Despite our differences, we shared a common goal of learning and self-improvement, which greatly expanded my perspectives on global issues and deepened my understanding of different viewpoints. Though we came from different countries and cultures, we had the same goal: to study disaster management policy. The course also provided valuable practical experiences through field trips, workshops, and seminars, allowing me to bridge the gap between theoretical knowledge and real-world application. These experiences not only sharpened my skills but also built my confidence in addressing complex challenges I may face in my future career.

I would also like to express my heartfelt thanks to JICA, ICHARM, PWRI, and GRIPS for providing this opportunity to pursue a master's course in disaster management policy (DMP) with a focus on flood disaster risk reduction, and to all the professors for their guidance and support throughout the year. Your dedication has been instrumental in my development. Thank you very much. Obrigado barak.

Action Reports from ICHARM Graduates

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. HISHINUMA Shiro, a Japanese student who was enrolled in the doctoral program from 2010 to 2013, has kindly contributed the following article to this issue.

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2010-2013年 博士課程卒業生である菱沼　志朗氏（日本）の寄稿文をご紹介します。

HISHINUMA Shiro / 菱沼 志朗

R&D Center, Nippon Koei Co., Ltd., Japan
日本工営株式会社　中央研究所

It has been 11 years since I graduated from the ICHARM doctoral program. Time flies quickly. During these 11 years, I have been working at Nippon Koei, undertaking a variety of roles in different departments. Currently, I am affiliated with its R&D Center in Tsukuba, serving as the manager of the Digital Platform Group. One of my current activities involves working on the DIAS's Water-related Issues Application Project. I have regular meetings with Executive Director Koike, Research Specialist Tamakawa, Senior Researcher Rasmy, and Dr. Asif, focusing on how these applications should be effectively utilized as a support system for optimal dam operation. I am grateful that I can still be involved with ICHARM in this way, even after graduation.

Upon receiving the request to contribute this Action Report for the ICHARM newsletter, I would like to share two key experiences from my career so far, particularly ones that I believe will resonate with the alumni and readers.

1. Invaluable Experience through Consulting Projects

After graduating from ICHARM, I joined an overseas department. There, I was involved in various water-related disaster projects with JICA, the Asian Development Bank, and the World Bank. Due to my consultant role, I am not allowed to provide detailed explanations of each project. However, as a hydrologist, I had invaluable experiences that I could not have traded for anything. One such experience was determining the locations for rainfall observation stations and discharge measurement stations for a flood forecasting and warning system (FFWS). It might not sound like cutting-edge research, but it was critical work. The ability to observe meaningful data in real-time as part of FFWS is, of course, essential. Additionally, these observation stations will continue to accumulate hydrological data over several decades. Through my past experiences, I have recognized the importance of long-term local observation data, which serves as the basis for river planning and management. Thus, I felt a significant responsibility in proposing where these stations should be placed.

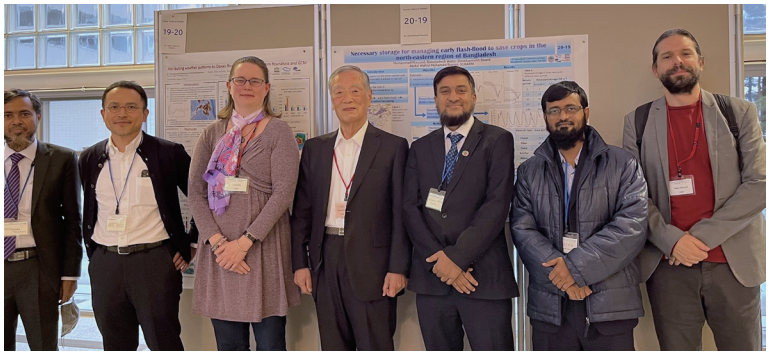
In mitigating flood damage through FFWS, it is a hydrologist's duty to select candidate locations for observation stations, considering the watershed's hydrological characteristics, such as topography, rainfall patterns, and flood arrival times. For this, we must understand the basin better than anyone else. The rationale behind site selection should include not only hydrological characteristics but also factors like accessibility for operation and maintenance (O&M) and the ability to communicate data via telemetry. Additionally, security is a crucial consideration due to the risk of equipment theft. Therefore, I discussed the matter with my counterparts and proposed placing rainfall observation stations within school premises. I visited the selected schools with my counterparts and helped explain to the principals the importance of installing rainfall observation stations from a basin-scale perspective for water-related disaster damage mitigation. We also emphasized the critical role of maintaining these stations and continuously accumulating data, ideally as part of educational activities. It would be gratifying if the children who receive this education eventually become civil engineers and contribute to disaster management in the future.

For effective O&M activities, it is vital to establish a management system and secure budgets. While I can propose

systems for building a management structure, budget allocation often depends on the current government's policy direction. Though I am not involved in policy-making, I hope to provide advice for these matters as a graduate of the policy studies program.

2. Advice that Continues to Resonate with Me

Many pieces of advice and guidance I received from my advisors, including former Executive Director Takeuchi, remain at the core of my thoughts academically, scientifically, technically, and philosophically. Since they are deeply personal, I would like to keep them to myself. I hope readers will understand.



My supervisor, former Executive Director Takeuchi (center), and his former students, including myself (second from left), at ICFM9 in Tsukuba, in February 2023. The photo was provided by Dr. Masood (third from right).

However, what I can openly share is the commencement speech at the graduation ceremony in 2013, which was delivered by Professor Emeritus Kiyoshi Kurokawa of GRIPS. The full speech is available on his website (https://kiyoshikurokawa.com/en/wp-content/uploads/2013/09/grips-commencement-speech-text-by-k-kurokawa.pdf). I encourage everyone to pause reading this newsletter and take a moment to read the full speech. By the way, my photo at the graduation ceremony is featured on the top page of the ICHARM website (which is a great honor, but since it has been there for quite a long time, I wouldn't mind if it were replaced soon).

The advice that has particularly stayed with me from his speech includes three key points: "Reason," "Compassion," and "Courage." Whether you are a graduate or current student, Japanese or non-Japanese, a researcher or government official, different parts of his speech may resonate more with you depending on your personal experience. However, I believe these three points are universally important.

Now, imagine you have a project to carry out and need to convince people about it. To begin with, you need to apply "reason," or rational thinking, to your work. You must be able to build up scientific evidence and logically explain the benefits that may result from the practical application of ideas, technologies, etc. However, you must remember that "reason" alone is not always enough for people to go with your plan. Sometimes, even knowing very well that they should act based on "reason," they hesitate. This is when you use "compassion." You must try your best to understand their situations and what makes them hesitate. Even after applying "reason" and "compassion," you may still face resistance. Then, you have to gather "courage" to keep talking to people; in a more general sense, the "courage" to keep addressing challenges and striving for a better world.

I always remind myself of the importance of these three key points and try to act on them whenever I meet a challenge. However, I must admit that it is not something I always manage to do. I struggle a lot, and there is no magic formula that can solve everything instantly. I believe that making steady progress, even in small steps, while keeping the three in mind, ultimately leads to growth, socially and personally.

The first ICHARM Alumni Webinar on Meteorology
ICHARM 第 1 回 Alumni Webinar（Meteorology）

9 月 2 日 午 後 1 時 ～ 3 時 に、ICHARM 第 1 回 Alumni Webinar を ICHARM 講堂で開催しました。ICHARM Alumni Webinar 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

ICHARM launched a new event, the ICHARM Alumni Webinar, and held its first meeting on September 2 from 1:00 p.m. to 3:00 p.m. at the ICHARM auditorium. This webinar is an online event intended to strengthen networking between alumni and current students by promoting interaction and to support ICHARM alumni in carrying out their duties at work by sharing knowledge and information on the latest trends and innovations in water hazard management. The webinar will be held four times a year, with each meeting focusing on one of the four fields of meteorology, sedimentology, hydrology, and risk management. The first meeting took place on

meteorology, featuring presentations from both ICHARM and alumni sides on their current research and cases of social implementation. The participants shared new developments and the latest information and exchanged comments and ideas.

In his opening remarks, Executive Director KOIKE Toshio explained the purpose and background of the alumni webinar. Mentioning the first "online" follow-up seminar during the pandemic on February 25, 2022, the 9th International Conference on Flood Management (ICFM9) from February 19 to 22, 2023, the "face-to-face" follow-up seminar after the pandemic on February 22, 2023, and the follow-up seminar held online on February 23, 2024, he informed the audience that how ICHARM can create more active partnerships with its alumni had continuously been discussed through these meetings and that thorough discussions ultimately resulted in two concrete actions: the development of the ICHARM alumni MEta database and the regular organization of a webinar to discuss issues in different fields, which is the ICHARM Alumni Webinar.

Presentations started with Senior Researcher USHIYAMA Tomoki explaining his research on climate change by using ensemble weather prediction and downscaling d4PDF, a database for policy decision making for future climate change. Research Specialist Acierto Ralph presented his research on estimating probable maximum precipitation using d4PDF for Kyushu, Japan, and on heavy rainfall in Panama. During the Q&A session, ITAGAKI Osamu, who graduated from the ICHARM doctoral program and currently serves as the director of the River Dynamics Management Group at the Public Works Research Institute (PWRI), asked many questions, facilitating an active discussion.

Two alumni followed. Rodrigo Fernandez Reynosa from Guatemala, who studied in the master's program from 2010 to 2011 and the doctoral program from 2012 to 2015, gave a presentation on climate change impacts on hydrology and water resources in Central America and detailed the international collaborative research framework for drought in Central America. Malik Rizan Asghar from Pakistan, who had enrolled in the master's program from 2017 to 2018, spoke about the efforts of the Pakistan Meteorological Department in hydrometeorological forecasting. He explained not only forecasting but also dissemination of forecasts, especially those of hazards likely resulting in disasters, including what should be done to deliver them to the right recipients to minimize livestock, infrastructural, and economic losses.

In his closing remarks, the executive director highlighted a wide range of global activities in water-related fields, from international research frameworks to the information sharing of climate projections. He also praised the presentations and discussions for being informative and inspirational and emphasized that the insights gained from them are highly valuable and crucial for the participants to carry out their work and research more effectively.

The first alumni webinar was attended by 41 graduates, including Director Itagaki, who joined the meeting at the venue. Additionally, there were 91 other participants.

Online and in-person participants in the first alumni webinar
オンラインおよび会場の第 1 回 Alumni Webinar 参加者

から、気象・土砂・水文・リスクマネジメントの 4 分野別に年 4 回開催する予定です。第 1 回目は、気象分野について ICHARM 側と卒業生側から最新の研究や社会実装状況に関して発表し、開発状況や最新情報を共有して意見交換を行いました。

最初の小池俊雄センター長からの開会挨拶では、Alumni Webinar の開催の目的のほか、2022 年 2 月 25 日に初めてオンライン開催された follow-up seminar から、2023 年 2 月 19 ～ 22 に開催された第 9 回洪水管理国際会議（ICFM9）、2023 年 2 月 22 日に対面で開催された follow-up seminar、2024 年 2 月 13 日にオンライン開催された follow-up seminar までの継続的な議論に基づいて Alumni Webinar を開催することになったという開催の経緯を紹介しました。それらの会議の中で、ICHARM は、ICHARM 卒業生との協力関係を活性化させる方法を模索し、2 つの具体的な行動を取ることに合意し、その 1 つが ICHARM 卒業生 MEta データベースの開発、もう 1 つが分野別のウェビナーの定期的な開催で、それが、この Alumni Webinar であると紹介しました。

その後、ICHARM 側から、牛山朋來主任研究員がアンサンブル気象予測と d4PDF のダウンスケーリングによる気候変動研究、アチェルトラルフ専門研究員が日本の九州を対象として d4PDF を用いて最大可能降水量（PMP）を推定する研究、およびパナマの豪雨研究についての研究を紹介しました。ICHARM 側の発表に対する質疑応答では、Ph.D 卒業生の板垣修・土木研究所河道保全研究グループ長から積極的な質問があり、議論しました。

続いて、卒業生側から、DMP 2010 ～ 2011 期、Ph.D 2012 ～ 2015 期でグアテマラ出身の Rodrigo Fernandez Reynosa 氏が、The climate change impacts on hydrology and water resources in Central America と題して、中央アメリカにおける干ばつの国際共同研究枠組みについて発表しました。次に DMP2017 ～ 2018 期のパキスタンの Malik Rizan Asghar 氏 が、Dissemination of hydrometeorological forecasts with the content, The dissemination of impact based hydrological and meteorological forecasts, approaching to the right audience well before time and giving them ample time to minimize the livestock, infrastructural and economical losses. と題して、パキスタン気象局で取り組んでいる、災害発生に直接つながる気象予測について、その伝達方法までを含めて紹介しました。

最後に、小池俊雄センター長からの閉会挨拶では、国際研究枠組みから現場の気象予測の情報伝達まで幅広い活動紹介があり、ICHARM や卒業生にとって非常に意義深く、今後の活動に資するものになったと講評し、閉会しました。なお、卒業生の

参加者は会場参加の板垣グループ長を含め 41 名でした。このほか、修士課程の在校生 13 名、博士課程の在校生 8 名、政策研究大学院大学（GRIPS）の教職員 3 名、JICA 地球環境部職員 3 名、ICHARM 元職員 5 名、ICHARM 現教職員 18 名を含め、オンライン参加と会場参加あわせて計 91 名が参加しました。

This included 13 master's students, eight doctoral students, three faculty members of the National Graduate Institute for Policy Studies (GRIPS), three staff members of JICA's Global Environment Department, five former ICHARM staff members, and 18 current ICHARM faculty members.

(Written by USHIYAMA Tomoki and KOBAYASHI Hajime)

Public Relations

The 72nd ICHARM R&D Seminar
第 72 回 ICHARM R&D セミナーを開催

ICHARM では、水災害分野に関する国内外の専門家を招聘し、最新の研究や知見について講演いただき、参加者の研鑽を深める機会として、ICHARM R&D セミナー（ICHARM 研究開発セミナー）」を不定期に開催しています。第 72 回の今回は、7 月 16 日に、清華大学地球システム科学系の Kun Yang 教授をお招きしました。

Kun Yang 教授は、清華大学で 1994 年に学士号、1997 年に修士号をそれぞれ取得し、2000 年に東京大学で博士号を取得しました。2003 年から 2007 年まで東京大学土木工学科准教授を務めた後、中国科学院チベット高原研究所に加入し、2016 年に清華大学に着任しました。CEOP/Water and Energy Budget Study (WEBS) プロジェクト委員長、GEWEX/Global Land-Atmosphere System Study Program (GLASS) 委員を歴任し、2021 年よりクラリベイト社の「高被引用論文著者」に選ばれています。

講演では「Development of a Regional Climate Modelling System for the Tibetan Plateau」のタイトルで、領域気象モデル（WRF）をベースとしたチベット高原気候システムモデル（TPCSM）の開発について紹介いただきました。具体には、典型的な地表面プロセス、湖と空気の相互作用、雲プロセス、複雑な地形・地形関連プロセスのパラメタリゼーションを実装することで、モデル物理を強化し、モデリングの精度が大幅に向上したことが紹介されました。フロアからは熱心な質問があり、最後まで有意義な時間となりました。

ICHARM では今後も様々な機会をとらえ、幅広い分野から水災害・リスクマネジメントに関わる知見を広く伝えるべく、セミナーを開催していく予定です。

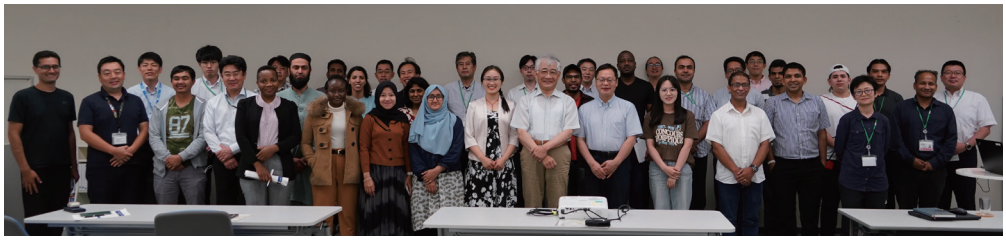
ICHARM holds Research and Development (R&D) Seminars on an irregular basis to help researchers enhance their skills and stay up-to-date with the latest research findings by inviting domestic and international experts in various fields of water-related disaster management. On July 16, 2024, the 72nd seminar was held by inviting Professor Kun Yang from the Department of Earth System Science at Tsinghua University.

Professor Kun Yang
Kun Yang 教授

Professor Kun Yang received his bachelor's and master's degrees from Tsinghua University in 1994 and 1997, respectively, and his Ph.D. from The University of Tokyo in 2000. From 2003 to 2007, he served as an associate professor at the Department of Civil Engineering at The University of Tokyo before joining the Institute of Tibetan Plateau Research of the Chinese Academy of Sciences. He started his career at Tsinghua University in 2016. Professor Yang was the chair of the CEOP/Water and Energy Budget Study (WEBS) project and a committee member of the GEWEX/Global Land-Atmosphere System Study Program (GLASS). He was selected as a "Highly Cited Researcher" in 2021 by Clarivate, a global provider of transformative intelligence.

In his talk, titled "Development of a Regional Climate Modeling System for the Tibetan Plateau," he presented the development of the Tibetan Plateau Climate System Model (TPCSM) based on the Weather Research and Forecasting (WRF) Model. He successfully enhanced the model physics by parameterizing typical land surface processes, lake-air interactions, cloud processes, and complex topography and terrain-related processes, significantly improving modeling accuracy. The presentation was inspiring and insightful, and the participants asked many questions about his approach.

ICHARM will continue organizing seminars at various opportunities in the future to update researchers with the latest knowledge and skills on water-related issues across a wide range of perspectives.



Seminar participants
参加者と集合写真

(Written by TAKEGAWA Shinya)

Miscellaneous

Comments from internship students
インターン生からのコメント

ICHARM welcomed two internship students this summer: Mr. Shi Feng, a student of Kyoto University's Graduate School of Engineering, for two weeks from August 26 to September 6, and Mr. JAMAL Najeebullah, a student of Ritsumeikan University's Department of Civil and Environmental Engineering, for three weeks from August 20 to September 13.

They kindly contributed the following messages while looking back at their research activities at ICHARM.

ICHARMでは、Shi Fengさん（京都大学大学院工学研究科）とJAMAL Najeebullahさん（立命館大学大学院理工学研究科）の2名をインターン生として受け入れました。

ICHARMでの活動を振り返ってコメントをいただきました。

Mr. Shi Feng — *Internship Student*

(Kyoto university, Graduate School of Engineering)

Stay period: August 26 - September 6, 2024

From left: Miyamoto Senior Researcher and Mr. Shi Feng

My name is Shi Feng from China. I am a Ph.D. student at the Graduate School of Engineering, Kyoto University. Before coming here, I had several opportunities to collaborate with ICHARM, both in research programs and conferences. During my two-week internship at ICHARM, I had the privilege of experiencing the enriching environment of this prestigious research institution. The supportive atmosphere allowed me to gain valuable insights into the workings of high-level academic research. Under the guidance of my supervisor, Miyamoto-sensei, I had the opportunity to expand my research by exploring its applicability to different regions, which broadened my understanding of its potential universality. A highlight of my internship was attending the 16th AOGEO Symposium, where I was introduced to the concept of "Earth Intelligence" and gained new knowledge in areas such as remote sensing and satellite imagery. As part of my progress, I applied GSMaP, one of the satellite rainfall data provided by JAXA, and regionalized the 1K-DHM model to New Zealand, on the opposite side of the Asia-Oceanic region. Although the results did not perform as expected, these experiences have significantly contributed to my research and will undoubtedly enhance my future work. I would like to express my sincere thanks to all the researchers who provided invaluable comments on my research and to the officers who ensured a smooth process. I look forward to seeing you all again in the future, somewhere on this planet.

Mr. JAMAL Najeebullah — *Internship Student*

(Ritsumeikan University, Department of Civil and Environmental Engineering)

Stay period: August 20 - September 13, 2024

My name is JAMAL Najeebullah, and I am a Ph.D. student at the Department of Civil and Environmental Engineering of Ritsumeikan University in Japan. I came from Afghanistan to Japan to study in a master's course in April 2022. In Afghanistan, I worked with the Water Resources Department of the Ministry of Energy and Water, which was related to water resources modeling and climate change impact assessment. After getting my master's degree in April 2024, I obtained information on internship opportunities at ICHARM, an international center for water risk management, from my academic supervisor, Assoc. Prof. Keisuke SATO. I would like to express my sincere gratitude to the president of PWRI for accepting my internship application. I wish to express my sincere gratitude to the Japan International Cooperation Agency (JICA) for providing me with a scholarship opportunity and supporting this internship program.

From left: Mr. JAMAL Najeebullah and Shrestha Research Specialist

During my nearly one-month internship, Shrestha Sensei was my main supervisor, and TAMAKAWA Sensei, USHIYAMA Sensei, and RASMY Sensei were my co-supervisors. I learned the application of the Rainfall-Runoff Inundation (RRI) model for flood hazard and risk assessment. I conducted model simulations for extreme climate events to predict flood inundation areas. I also learned statistical downscaling of Global Climate Models (GCMs) using the Data Integration and Analysis System (DIAS).

I usually met Shrestha Sensei several times a day and asked for his guidance, and he kindly supported me with a nice smile. Thank you very much, Sensei! TAMAKAWA Sensei kindly taught me the selection, downscaling, and statistical analysis of GCM results, and USHIYAMA Sensei and RASMY Sensei provided invaluable guidance,

insightful ideas, and kind support. I sincerely thank Ms. OGURA Junko for her kind support through all administrative processes and for helping me to have a fruitful time at ICHARM. I would like to thank everyone at ICHARM for creating a collaborative environment where everybody supports each other.

The skills, research ideas, and insights I have obtained from this internship will surely help my future research. I am grateful for the opportunity to do an internship at ICHARM. Finally, I would like to thank all the staff of ICHARM for their support during the internship, especially my former colleagues and lifelong friend, Mr. Bromand. Thank you very much, everyone, and I wish you all a happy and prosperous life.

Personnel change announcements
人事異動のお知らせ

Joining ICHARM

A new member joined ICHARM in September.
She would like to say a brief hello to readers around the world.

NAGUMO Naoko / 南雲 直子
Research Specialist / 専門研究員

My expertise lies in physical geography and fluvial geomorphology, and my research has focused on sediment transportation and landform development by rivers, the historical relationship between humans and rivers, and the application of these findings to sustainable societies. In my previous position at the Interfaculty Initiative in Information Studies, The University of Tokyo, I worked on the HyDEPP-SATREPS project, conducting research on flood risk assessment and enhancing local flood resilience in the Philippines. I am very pleased to be a member of ICHARM again.

Business trips / 海外出張リスト

* July -September 2024

- *July 13-18, MORI Noriyuki and Abdul Wahid Mohamed RASMY, Ethiopia, to participate Nile Cooperation for Climate Resilience (NCCR) Workshop*
- *July 27-August 11, USHIYAMA Tomoki, NAITO Kensuke (July 28-August 11), TAMAKAWA Katsunori (July 27-August 9) and Yamashita Daiki (July 27-August 9), Cordoba and Buenos Aires in Argentina, 1) to participate in JCC meeting (SATREPS Argentine Republic) 2) to attend workshop and field survey in Cordoba and Buenos Aires*
- *September 22-24, KOIKE Toshio, Beijing, China, 1) to deliver a lecture in Tsinghua University 2) to give a keynote speech at the 40th anniversary celebration even of IRTCES and Participate at the 3rd Asia International Water Week*
- *September 22-29, Abdul Wahid Mohamed RASMY and Shrestha Badri Bhakta, Sri Lanka, to conduct field investigation and household surveys in the flood-prone areas*
- *September 23-26, HARADA Daisuke, Beijing, china, to participate 3rd AIWW (Asia International Water Week) and 40th anniversary of IRTCES*
- *September 25-28, KOIKE Toshio, Paris, France, to Participate in the International Conference "A Decade of the Sendai Framework for Disaster Risk Reduction – Envisioning the Road Ahead" hosted by UNESCO*
- *September 28-October 11, QIN Menglu, Ghana, to conduct field surveys and consult with Ghanaian government agencies as a member of the JICA research team for the SATREPS Ghana Project*
- *September 30-October 6, MIYAMOTO Mamoru, Bangkok and Surat Thani, Thailand, to participate in seminar "Development of Rainfall-Runoff Modelling System and Application of Satellite-based Rainfall Phase II" and field trip*

Visitors / 訪問者リスト

* July -September 2024

- *Visited by Dr. Kun Yang from Tsinghua University, July 16*
  Purpose: invited speakers for the 72st ICHARM R&D Seminar
  See "The 72nd ICHARM R&D Seminar**" on page 38*
- *Visited by delegate from the Meteorological Department, Disaster Management Centre, Irrigation Department and the National Building Research Organisationof Sri Lanka, July 18*
  Purpose: part of their professional training
  See "Training for Sri Lanka visitors**" on page 4*
- *Visited by the Department of Hydraulic Engineering of Tsinghua University, China, July 29*
  Purpose: part of their international study trip to learn more about floods and geohazards in Japan
  See "Young visitors from Tsinghua University, China**" on page 5*

- *Visited by Six Rwandan delegates (Ministry in Charge of Emergency Management, Rwanda Meteorology Agency, and the Rwanda Space Agency) and seven Paraguayan delegates (Space Agency and one from the Creation of the National Service for Plant and Seed Quality and Health), August 27*

  Purpose: part of their training on satellite data utilization under the Human Resource Development in the Space Sector project conducted by JICA

  See "Lectures for Rwandan and Paraguayan visitors**" on page 6*
- *Visited by delegate from Malaysia-Japan International Institute of Technology (MJIIT), September 17*

  Purpose: ICHARM researchers gave lectures

  See "Visitors from MJIIT, Malaysia**" on page 7*
- *Visited by delegate from Typhoon Committee Secretariat (TCS), National Disaster Management Institute (NDMI), National Research Institute for Earth Science and Disaster Resilience (NIED), September 26*

  See "Typhoon Committee: The workshop on "Capacity Building/Knowledge Sharing in DRR"**" on page 8*

Publications / 対外発表リスト

* July -September 2024

1. Journals, etc. / 学術雑誌（論文誌、ジャーナル）

- *Md. Majadur Rahman, Daisuke Harada and Shinji Egashira, Numerical Simulation of River Channel Change in the Suspended Sediment-Dominated Downstream Reach of the Sangu River, Water 2024, MDPI, July 8 2024, https://doi.org/10.3390/w16131934*
- *Katsunori TAMAKAWA, Shigeru Nakamura, Cho Thanda Nyunt, Tomoki Ushiyama, Mohamed Rasmy, Keijiro Kubota, Asif Naseer, Eiji Ikoma, Toshihiro Nemoto, Masaru Kitsuregawa, and Toshio Koike, Investigation of an ensemble inflow prediction system for upstream reservoirs in Sai River, Japan, Water 2024, MDPI, September 11 2024, https://doi.org/10.3390/w16182577*

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

- *HARADA Daisuke、Development of a physics-based rainfall-sediment-wood runoff (RSR) model and its application to flood disasters and sediment runoff from a basin、The 3rd Asia International Water Week、The Asia Water Council、September 24-28, 2024*
- *NAITO Kensuke, SHINYA Takafumi, Assessing flood risk on local economy focusing on indirect impact through supply chain, The 9th Global Energy and Water Exchanges Open Science Conference 2024 SAPPORO, GEWEX, July 7-12, 2024*
- *Abdul Wahid Mohamed RASMY, TAMAKAWA Katsunori, KUBOTA Keijiro, KOIKE Toshio, Progress and challenges in monitoring and forecasting flood hazards using multi-platform observations and a hydrological model in developing regions, The 9th Global Energy and Water Exchanges Open Science Conference 2024 SAPPORO, GEWEX, July 7-12, 2024*
- *HARADA Daisuke, QIN Menglu, EGASHIRA Shinji, Prediction of water, sediment, and driftwood runoff during extreme events using the Rainfall-Sediment-Runoff (RSR) model, The 9th Global Energy and Water Exchanges Open Science Conference 2024 SAPPORO, GEWEX, July 7-12, 2024*
- *QIN Menglu, HARADA Daisuke, EGASHIRA Shinji, Prediction of sediment yields and transport processes in a drainage basin caused by an extreme rainfall event, The 9th Global Energy and Water Exchanges Open Science Conference 2024 SAPPORO, GEWEX, July 7-12, 2024*
- *Shrestha Badri Bhakta, Abdul Wahid Mohamed RASMY, SHINYA Takafumi, Assessment of Spatiotemporal Dynamics of Flood Exposures and Evaluation of Flood Risk Reduction Strategies in the Solo River Basin of Indonesia, The 9th Global Energy and Water Exchanges Open Science Conference 2024 SAPPORO, GEWEX, July 7-12, 2024*

3. Poster Presentations / ポスター発表

- *南雲 直子、大原 美保、Ballaran Vicente Jr. De Guzman、ルソン島中部の洪水常襲地帯における集落の立地形態、2024年日本地理学会秋季学術大会、日本地理学会、2024年9月14～16日*
- *USHIYAMA Tomoki, Ralph Allen ACIERTO, Dynamic downscaling of d4PDF large ensemble global projections for river basins in Philippine and Indonesia, The 9th Global Energy and Water Exchanges Open Science Conference 2024 SAPPORO, GEWEX, July 7-12, 2024*
- *TSUTSUI Hiroyuki, Agricultural drought assessment for drought regions in ITCZ and Subtropical High using the Coupled Land and Vegetation Data Assimilation System (CLVDAS), The 9th Global Energy and Water Exchanges Open Science Conference 2024 SAPPORO, GEWEX, July 7-12, 2024*
- *Ralph Allen Acierto, KOIKE Toshio, Determining the contribution of climate change on the maximum rainfall in Kyushu using d4pdf large ensemble dataset, The 9th Global Energy and Water Exchanges Open Science Conference 2024 SAPPORO, GEWEX, July 7-12, 2024*
- *TAMAKAWA Katsunori, KOIKE Toshio, Abdul Wahid Mohamed RASMY, KUBOTA Keijiro, Megnath NEOPANEY, Investigation of satellite precipitation dataset and snow hydrological model in the upper Chamkharchu basin in Bhutan, The 9th Global Energy and Water Exchanges Open Science Conference 2024 SAPPORO, GEWEX, July 7-12, 2024*
- *NAITO Kensuke, YOROZUYA Atsuhiro, Dynamic nature of H-Q rating curve and new approach to its development and maintenance, The 9th Global Energy and Water Exchanges Open Science Conference 2024 SAPPORO, GEWEX, July 7-12, 2024*
- *KAKINUMA Daiki, NUMATA Shingo, MOCHIZUKI Takafumi , KUBOTA Keijiro, NAKAMURA Yosuke, KOIKE Toshio, IKEUCHI Koji, Development of a Manual on Flash Flood Forecasting System for Small and Medium-Sized Rivers, The 9th Global Energy and Water Exchanges Open Science Conference 2024 SAPPORO, GEWEX, July 7-12, 2024*
- *DENDA Masatoshi, KURIBAYASHI Daisuke, KOYABU Tsuyoshi, SHINYA Takafumi, Possibility of educational game software to maintain young people's long-term interest in water-related disasters, The 9th Global Energy and Water Exchanges Open Science Conference 2024 SAPPORO, GEWEX, July 7-12, 2024*

4. Magazines, Articles / 雑誌、記事（土技資含む）

- *小池 俊雄、激甚化、頻発化する水害、自治実務セミナー8月号、pp.2-5、第一法規株式会社*

5. PWRI Publications / 土研刊行物（土研資料等）

- *森 範行、江頭 進治、藤兼 雅和、大成 梨夏子、2022-2023 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」実施報告書、土木研究所資料 第4450号、2024年7月*
- *伊藤 弘之、江頭 進治、小林 肇、宮崎 了輔、2020-2021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」実施報告書、土木研究所資料 第4452号、2024年9月*
- *ITOU Hiroyuki, EGASHIRA Shinji, KOBAYASHI Hajime, Miyazaki Ryosuke, OHKUBO Masahiko, Report on 2020-2021 M.Sc. Program, "Water-related Disaster Management Course of Disaster Management Policy Program" , PWRI Technical Note No 4452, September, 2024*

6. Other/ その他

None / 該当者無し

Editor's Note
編集後記

今年度も半年が過ぎました。この編集後記を執筆している９月末は残暑が厳しい日も多いですが、秋の涼しさを感じられる日も少しずつ増えてきています。寒暖差が激しい時期ですので、どうぞご自愛ください。

さて、ICHARM では、活動３本柱の１つである「効率的な情報ネットワーク」として、今年度も様々な取り組みを行っています。９月上旬には、第 16 回アジア・オセアニア地球観測に関する政府間会合（AOGEO）シンポジウムの第１分科会として位置づけられているアジア水循環イニシアティブ（AWCI）セッションを主催しました。AWCI は水問題の解決に向けた包括的な取り組みを推進し、国際協力について継続的に議論している貴重な枠組みです。国際広報チームの一員としてこの仕事に携われたことに大きなやりがいを感じるとともに、一研究員として自分の専門を磨き、科学による社会課題解決に貢献できるような人材になっていきたいと決意を新たにしたところです。

ICHARM では、今後も様々なイベントを通じて、国内外における情報ネットワークの構築・強化につなげたいと考えています。今年度後半も引き続きよろしくお願い致します。

Six months have passed this fiscal year. I am writing this editor's note at the end of September. Though September is considered the beginning of autumn in Japan, we still had many days with intense summer heat. However, we have finally started feeling the cool autumn air toward the end of the month.

ICHARM has also been working on various projects in this year to practice "Efficient Information Networking," one of the three pillars of our activities. In early September, we hosted the Asian Water Cycle Initiative (AWCI) session, which was categorized as Task Group 1 of the 16th Asia-Oceania Group on Earth Observation (AOGEO) Symposium. AWCI is a valuable framework that promotes a comprehensive approach to solving water issues and continuously discusses issues related to international cooperation. I feel great excitement to be involved in this work as a member of the International Network and Public Relations team. I have also renewed my determination to hone my expertise as a researcher and become a person who can contribute to solving social issues through science.

ICHARM will continue to build and strengthen its domestic and international information network through various events in the future. We look forward to your continued support in the second half of this fiscal year.

ICHARM Newsletter Editorial Committee
TAKEGAWA Shinya

メーリングリストへ登録ご希望の方は、下記 ICHARM ホームページの
登録フォームか QR コードからご登録ください。
To subscribe the ICHARM Newsletter, please access the following site or the QR cord;
https://www.pwri.go.jp/icharm/mailmag/index.html

また、今後の配信を希望されない方やメールアドレスが変更になった方は
下記アドレスまでご一報ください。ご意見・ご感想もお待ちしています。
For those who want to unsubscribe the Newsletter, please contact us:
icharm@pwri.go.jp
We welcome your comments and suggestions.

ICHARM Newsletter Subscription