

Newsletter



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under the auspices of UNESCO



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ICHARM

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

Message from Director

Competing with Nature in Survival Skills to Out-Innovate Severe Droughts

Since the beginning of this century, wide-area, long-lasting droughts have been reported frequently from all over the world. The Millennium Drought hit Australia from 2001 to 2009, costing the government a direct financial support of 4.4 billion AUD to the farmers. Severe droughts occurred continuously for four years from 2010 to 2013 in Somalia, widely known as the Horn of Africa, and the Sahel, also a part of Africa, seriously affecting 31 million people. California, too, had to endure severe droughts year after year from 2011 to 2017. Among them, the one in 2014 is considered as the worst drought ever in the area in 1,200 years, resulting in economic losses of 2.2 million dollars in total. Northeast Brazil is another area that experienced serious droughts from 2012 to 2017, which caused devastating agricultural damage and unstable electric power supplies.

Natural vegetation survives long, severe droughts by changing its traits. The analysis of the Millennium Drought using satellite-based visible-infrared and microwave remote sensing and an echo-hydrological model shows that, although the vegetation biomass decreased year by year, the greenness did not change very much during the droughts. This resilience of greenness to droughts is explained as a unique strategy that vegetation employs to survive serious droughts by adjusting the allocation rate of photosynthesized carbon to leaves and stems.

Responding to a request from the World Bank Group, ICHARM has been implementing an agricultural drought monitoring and prediction project in Ceara State in Northeast Brazil in collaboration with the University of Tokyo and the Ceara State Meteorology and Water Resources Foundation (FUNCEME). In March 2019, ICHARM demonstrated a state-scale information sharing system using the Coupled Land and Vegetation Data Assimilation System (CLVDAS) operated by the Data Integration and Analysis System (DIAS). Putting a high valuation on its performance, the Secretariat of Agricultural Development of Ceara decided to provide the DIAS with local farming information obtained through the network of state agricultural instructors in real time. ICHARM is now making efforts to produce integrated, tailor-made agriculture support information, hoping that it will help the fight against severe droughts even more effectively than the strategy of natural vegetation does.



Director Toshio Koike demonstrates the agricultural monitoring and prediction system in Ceara on March 26, 2019.

セアラ州にて農業渇水監視・予測システムを紹介する小池俊雄センター長(2019年3月26日)

April 26, 2019
Toshio Koike
Director of ICHARM

大規模長期渇水を生き抜く智慧比べ

今世紀に入り、世界各地から大規模長期渇水が報告されています。オーストラリアでは2001~2009年にミレニアム渇水と呼ばれる大渇水が生じ、政府からの農家への直接支援だけでも44億豪ドルに達したといわれています。2010~2013年にアフリカの角と呼ばれるソマリアやサヘルで大渇水が生じ、3100万人もが深刻な影響を受けました。2011~2017年にはカリフォルニア大渇水が生じ、とりわけ酷しかった2014年は1200年に1回の渇水と言われ、この1年で経済的被害は220万USDに達しています。ブラジル東北部も2012~2017年に大渇水を経験し、深刻な農作物被害や電力供給不安が報告されています。

自然植生はその形質を変化させることによって大規模長期渇水を生き抜いているようです。オーストラリアのミレニアム渇水の事例を、可視・近赤外とマイクロ波を用いた衛星観測と陸域水文-生態系結合モデルで解析すると、経年的に植生バイオマス量は減少しているものの、緑被率には大きな変化が見られないことが示されています。この植生緑被の渇水に対するレジリエンスは、光合成によって生成した炭素を葉や莖に配分する割合を変化させることによって、渇水を生き抜く植生の戦略であると考えられています。

ICHARMでは世界銀行の要請を受けて、ブラジル北東部のセアラ州を対象に農業的渇水のモニタリングと季節予測情報を提供するプロジェクトを、東京大学とセアラ州気象水資源財団(FUNCEME)との協力で行っています。本年3月末には、データ統合・解析システム(DIAS)と衛星観測を基にした陸面-植生結合データ同化システム(CLVDAS)を用いて州レベルの情報提供システムのデモを行いました。その有用性が認められた結果、同州の農業指導員ネットワークによって収集される各地区の営農情報が、州農業局からDIASにリアルタイムに提供されることになりました。ICHARMは、大規模長期渇水を生き抜く自然植生の叡智に負けない、統合的でテラーメイドな情報共有システム作りに取り組んでいます。

Special Topics

3. Special lecture, "Global trend and Japan," by Mr. Koïchiro Matsuura, the 8th Director-General of UNESCO / ユネスコ第8代事務局長 松浦晃一郎氏による特別講演会「国際社会の動向と日本」の開催
4. Joint research agreement concluded between Iwaizumi Town and ICHARM / 岩手県岩泉町と研究連携協力協定を締結
5. Upper house members visit ICHARM / 参議院の議員の皆様への訪問

International Flood Initiative (IFI)

5. DIAS training workshop and the 5th Disaster Management Collaboration Dialogue in Myanmar / ミャンマーにおける「DIAS トレーニング」の開催と「第5回ミャンマー防災協働対話」への参加
7. The 3rd plenary meeting of IFI Platform in the Philippines / フィリピンにおける第3回 IFI プラットフォーム全体会合
8. The 3rd plenary session for the Platform on Water Resilience and Disasters in Sri Lanka / スリランカにおける「第3回・水のレジリエンスと災害プラットフォームに関する会議」の開催

Training & Education

9. The 12th ICHARM Follow-up Seminar in Nepal / 第12回 ICHARM フォローアップセミナーの開催(ネパール、カトマンズ)
10. Educational program updates / 修士課程研修 活動報告
12. Recruiting missions (Nepal, Indonesia, and Myanmar) / リクルート活動報告 (ネパール、インドネシア、ミャンマー)
14. Workshop on Flood Forecasting in RID, Thailand / タイ王立灌漑局の洪水予測ワークショップ

Research

14. - Special contribution / 特別寄稿 -
15. Great flood of Kerala in August 2018
16. Introduction of ICHARM research projects / 研究紹介
17. Sediment transport and channel changes in water related disaster prediction

Information Networking

18. Typhoon Committee-related activities (Jan – Mar 2019)
-- the 51st session in China and a workshop on IFI platform in the Philippines -- / 1月～3月の台風委員会関連活動
19. Participation in THA 2019 / タイで開かれた国際会議 THA2019 (International Conference on Water Management and Climate Change towards Asia's Water-Energy-Food Nexus and SDGs) への参加
20. The 3rd Indo-Japan Workshop on Disaster Risk Reduction and field trip to Kerala State / 第3回日印防災協力会議への参加と Kerala 州への現地調査

Field Survey

22. The 3rd field survey in the Sittaung River of Myanmar to investigate riverbanks and coastal erosion / 第3回ミャンマー国シッタウン川現地調査
23. Field surveys in the lower Stung Sen and Stung Staung Rivers in Cambodia / カンボジア・セン川及びスタウン川下流域における現地調査

Others

24. Annual hanami lunch / お花見ランチ
25. Comments from internship students / インターン生からのコメント
26. Personnel change announcement / 人事異動のお知らせ
27. Business trips / 海外出張リスト
28. Publications / 発表論文リスト



Special Topics

Special lecture, "Global trend and Japan," by Mr. Koïchiro Matsuura, the 8th Director-General of UNESCO / ユネスコ第8代事務局長 松浦晃一郎氏による特別講演会「国際社会の動向と日本」の開催

ICHARM holds ICHARM R&D Seminar for the executives and researchers of the National Institute for Land and Infrastructure Management and the Public Works Research Institute to learn the latest knowledge and findings on water issues by inviting domestic or foreign experts in hydrology and water-related disasters.

The 64th seminar was held on January 16, 2019, as a special lecture by Mr. Koïchiro Matsuura, the eighth Director-General of UNESCO. After becoming the first Asian who assumed the top position of UNESCO, Mr. Matsuura led the organization for 11 years from November 1999 to November 2009. During his tenure, he carried out so many projects including the organizational reform of UNESCO and the establishment of ICHARM as a UNESCO category II center in March 2006.



Mr. Matsuura answers a question from a master's student
修士学生からの質問に答える松浦氏



Mr. Matsuura (right) and the audience
会場の様子



A master's student asks Mr. Matsuura a question
修士学生からの質問

taking photos with everybody there.

Among the audience were Dr. Tadahiko Sakamoto, the former President of PWRI, and Prof. Kuniyoshi Takeuchi, the founding Director of ICHARM and a Professor Emeritus of Yamanashi University, both of whom made significant contributions to the establishment of ICHARM. In addition, the MC of this special lecture was Dr. Yoshiyuki Imamura, the Director for Special Research of ICHARM, who was dispatched at that time to UNESCO from the Ministry of Land, Infrastructure, Trans-

ICHARM では、水文分野や水災害分野に関する国内外の研究者・有識者を招へいし、国土技術政策総合研究所・土木研究所の幹部及び研究者が最新の知識や知見を入手できる機会として「ICHARM R&D Seminar (ICHARM 研究開発セミナー)」を開催しています。

2019年1月16日開催の第64回R&Dセミナーは、特別講演会として、講師に第8代ユネスコ事務局長松浦晃一郎氏をお迎えしました。同氏は、アジア人初のユネスコ事務局長として、1999年11月から2009年11月まで11年間勤められ、その間2006年3月のユネスコカテゴリー2センターとしてのICHARMの設立など様々な活動に取り組みました。

講演では「国際社会の動向と日本」と題し、第二次世界大戦後の時代を3つのフェーズ（冷戦時代・アメリカ一強時代・中国が台頭し混沌となる時代）に区分し、近年のポピュリズムの台頭や東アジアの勢力変化の情勢が解説されました。そのうえで、中国とアメリカが争う現代こそ、世界的に日本の役割が期待されていることが述べられました。

約70名入れるICHARM講堂は満席となり、講演後、ICHARM修士・博士学生を中心に活発な質疑が行われました。最後には参加者全員で集合写真を撮影し、閉会しました。

本講演会には、ICHARM設立に奔走された当時土木研究所理事長の坂本忠彦氏と、初代ICHARMセンター長の竹内邦良山梨大学名誉教授も参加され、さらに会の司会は当時国土交通省からユネスコに派遣され様々な調整を行った今村能之 ICHARM 特別研究監が務めるなど、ICHARM 設立に大きく関係された方々を迎えての実施となり、記念すべき会となりました。

On this occasion, Mr. Matsuura spoke about the current global situation under the title of "Global trend and Japan." Dividing the post-WWII era into three phases – the Cold War, America as No. 1 superpower, and China's rise and global disorder, he explained how the recent surge of populism around the world became possible and how the power shift in Eastern Asia has evolved over time. Referring to the fierce competition between China and the U.S., he insisted that now is the time for Japan to meet global expectations and play an important role in restoring global order.

The ICHARM auditorium was packed to its full capacity of about 70 people. After the lecture by Mr. Matsuura, many people including master's and doctoral students studying at ICHARM asked questions. The seminar ended after

port and Tourism and also dedicated himself to the creation of ICHARM. The 64th seminar was a great opportunity to learn global issues from the experienced professional, as well as to meet the founders of ICHARM.



Mr. Matsuura (front row, center) and the audience
参加者全員で集合写真

(Written by Daisuke Kuribayashi)

Joint research agreement concluded between Iwaizumi Town and ICHARM / 岩手県岩泉町と研究連携協力協定を締結

近年中山間地における洪水・土砂災害が激甚化・頻発化しています。中山間地は、現象の予見が難しく、状況変化が急激であることが特徴で、さらにこのような地域での高齢化や人口減少の進行が、地域の防災力の低下となり、地域の脆弱性が増していることが大きな被害につながる要因となっています。これらは中山間地を擁する市町村での共通の課題であり、このため ICHARM では中山間地における水災害防止・軽減に向けた研究活動を、国、県、市町村等と連携しながら進めています。

これらの背景を踏まえ、平成 28 年台風 10 号で甚大な被害を受けた岩手県岩泉町と ICHARM は、「中山間地における水関連災害リスクに係る調査研究・技術開発に関する連携・協力協定」を締結し、平成 31 年 2 月 18 日、中居健一岩泉町長臨席のもと、岩泉町役場において協定締結式を実施しました。この協定を踏まえ ICHARM は今後、岩泉町との緊密な連携のもとで、災害に関する住民意識調査や洪水リスクの評価手法の検討、および災害情報共有システムの利活用などに関する研究を実施する予定です。

なお、同様の内容の覚書を平成 30 年 6 月に新潟県阿賀町と締結しており、今回が 2 例目となります。今後予定している具体的な研究内容については、下記ホームページをご覧ください。

https://www.pwri.go.jp/icharm/special_topic/20190228_mou_IwateIwaizumi.html



Mayor Nakai and Deputy Director Sawano
at the signing ceremony
締結式での中居健一町長（左）と澤野副センター長

In Japan, flood and sediment disasters in mountainous areas have become more intense and frequent in recent years. Such disasters are likely to cause severe damage to communities there because it is often very hard to predict when and where flood or other disastrous events occur in the mountains and also because hazards behave unpredictably once they occur. Moreover, mountain communities in Japan have been increasingly vulnerable to disasters as they have been quickly losing their disaster preparedness due to fast aging and shrinking populations. Since these issues are commonly shared among mountain communities in Japan, ICHARM has been studying effective ways to help them prevent or mitigate damage caused by water-related hazards in close cooperation with the state, prefectural and municipal governments.

On February 18, 2019, as part of this effort, ICHARM concluded a joint research agreement with Iwaizumi in Iwate Prefecture, a town in northern Japan, which suffered tremendous damage when Typhoon No.10 hit the area in 2016. The signing ceremony was held at the town office, where Mayor Kenichi Nakai and Deputy Director Hisaya Sawano signed the agreement. Closely cooperating with the municipal government, ICHARM will soon start discussing methods for a public disaster awareness survey and flood risk assessment and studying effective use of a disaster information sharing system.

Iwaizumi is the second municipality that concluded a research agreement with ICHARM after Aga of Niigata Prefecture in June 2018.

For more information on this project, visit the ICHARM website at:

https://www.pwri.go.jp/icharm/special_topic/20190228_mou_IwateIwaizumi.html

(Japanese only)

(Written by Daisuke Kuribayashi)

Upper house members visit ICHARM / 参議院の議員の皆様への訪問

Five members of the Upper House visited ICHARM on February 28, 2019, to learn about its activities and exchange views and opinions. The group, consisting of the upper house members who were elected in 2016 and belong to the Liberal Democratic Party, also visited other research institutes around Tsukuba City, where ICHARM is located.

At ICHARM, they first listened to short presentations outlining the history and main research projects of ICHARM, such as the development of a flood forecasting system using big data and risk communication theories. As ICHARM is currently developing a new application designed for people to experience a mock flood situation, the visit was a great opportunity for them to try it out. Finally, the upper house members met and talked with foreign researchers and trainees presently working or studying at ICHARM.



Upper house members with NILIM and PWRI executives
議員の皆様との集合写真



Talk with foreign researchers
外国人研究者との意見交換

(Written by Daisuke Kuribayashi)

平成 31 年 2 月 28 日、平成 28 年に当選された参議院自由民主党議員の皆様が、つくば市内の各研究機関を訪問され、その一環で ICHARM にも来訪されました。

ICHARM 講堂で、ICHARM の概要および主な研究内容（リスクコミュニケーション・ビッグデータを活用した洪水予測システム）の説明を受けられた後、開発中の「洪水疑似体験アプリ」を体験して頂きました。また、ICHARM に在籍する外国人研究者・研修員を紹介し、意見交換も行いました。

International Flood Initiative (IFI)

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

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

This article reports the DIAS training workshop in Myanmar, IFI Meeting in the Philippines and The 3rd Plenary Session for the Platform in Sri Lanka.

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

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

本号では、ミャンマーで行われた DIAS トレーニング、フィリピンで開催された IFI 会合、およびスリランカで行われたプラットフォーム会議について報告します。

DIAS training workshop and the 5th Disaster Management Collaboration Dialogue in Myanmar / ミャンマーにおける「DIAS トレーニング」の開催と「第 5 回ミャンマー防災協働対話」への参加

As the secretariat of the International Flood Initiative (IFI), ICHARM has been supporting the activities of the Platform on Water Resilience and Disasters in Myanmar. Meetings have been held twice with director generals of related organizations and once with director-level officials. In particular, the director-level meeting, held in last September, agreed on the concrete plans for future activities, such as identifi-

ICHARM は、IFI の事務局として、ミャンマーにおける「水のレジリエンスと災害に関するプラットフォーム」の活動を支援しており、これまで関係機関の局長レベルによる 2 回の会議を開催しています。また昨年 9 月には、課長レベルの実務者会合

を開催し、活動に必要なデータの確認や、今後活用する DIAS (Data Integration and Analysis System) のトレーニングを行うこと等、活動の具体的な進め方について確認しました。

この実務者会合を受け、東京大学等が実施している SATREPS のプロジェクト、東京大学の DIAS 関係者、ヤンゴン工科大学 (YTU) の協力のもと、2月4日、5日に、DIAS にかかるトレーニングを YTU において実施しました。ミャンマー側からは、プラットフォームのメンバーである、水資源河川系開発局 (DWIR)、気象水文局 (DMH)、灌漑水利用管理局 (IWUMD)、災害管理局 (DDM)、YTU から合計 12 名参加しました。

トレーニングでは、最初に YTU の Khin Than Yu 副学長と ICHARM の澤野久弥グループ長が挨拶をし、1日目は、1) ICHARM 吉野広郷主任研究員によるミャンマーにおける IFI 活動の紹介に引き続き、東京大学 生駒栄司特任准教授、安川雅紀特任助教、ICCHARM 玉川勝徳専門研究員による 2) DIAS の紹介、3) IFI 活動への DIAS の活用方法の紹介、4) 現地観測データの DIAS システムへのアップロード方法の紹介・実地訓練、5) データの品質管理、6) DIAS システムにアップロードしたデータの品質管理方法の紹介・実データをを用いた演習を行いました。2日目は、東京大学 絹谷弘子特任研究員、西川史恵特任研究員による 1) メタデータの紹介、2) 観測データの詳細メタデータの DIAS を用いた登録方法の紹介・実地訓練、ICCHARM 玉川専門研究員による 3) 気候変動予測モデル (CMIP5) の紹介、4) CMIP5 のデータの中から対象領域の気候特性を表現しているモデルの選択方法の紹介・実地訓練、5) CMIP5 における降水量の誤差修正と将来の降雨特性の解析方法の紹介と実データを用いた演習を行いました。このように講義だけではなく、演習を中心にした内容としたことで、DIAS 上での地上観測データ管理や気候変動予測モデルの解析手法について理解を深める機会となり、参加者からは、DIAS の内容について多くの質問やトレーニング終了後もこの DIAS のシステムを使いたいとの声が寄せられました。

また、2月6日には、ミャンマー・ネピドーにおいて、日本の国土交通省とミャンマーの災害管理局の共催により、DWIR、DMH、IWUMD、DDM の局長や課長レベルの職員及び日本の関係機関が参加する、第5回ミャンマー防災協働対話が開催され、ICCHARM はミャンマーにおけるプラットフォームの進捗状況や DIAS トレーニングについて報告を行いました。またこれにあわせて、各組織との個別会合も行い、次のプラットフォーム会議に向けた意見交換を行いました。

ICCHARM は今後とも引き続き、プラットフォームの活動支援を通して、ミャンマーでの水災害の防止・軽減に貢献してまいります。

ation of data to be used for the activities and training to operate the Data Integration and Analysis System (DIAS).

The DIAS training was held on February 4th and 5th at Yangon Technological University (YTU) in cooperation with the SATREPS project led by the University of Tokyo and some other organizations, researchers involved in the DIAS project led also by the University of Tokyo, and YTU. A total of twelve persons participated from the Myanmar side, including those from the Directorate of Water Resources and Improvement of River Systems (DWIR), the Department of Meteorology and Hydrology (DMH), the Irrigation and Water Utilization Management Department (IWUMD), the Department of Disaster Management (DDM), and YTU.

At the beginning of the training, Prof. Khin Than Yu, the Pro-rector of YTU, and Hisaya Sawano, the Deputy Director of ICHARM, delivered opening remarks. The training was conducted as follows:

Day 1: 1) Introduction of IFI in Myanmar by Hirosato Yoshino, a Senior Researcher of ICHARM; 2) Introduction of DIAS; 3) Introduction of DIAS applications for IFI activities; 4) Outline of DIAS the in-situ Data Uploading System and hands-on training; 5) Introduction of Quality Control; and 6) Introduction of the DIAS in-situ Data Quality Control System and hands-on training by Dr. Eiji Ikoma, Project Associate Professor, Dr. Masaki Yasukawa, Project Assistant Professor of the University of Tokyo, and Dr. Katsunori Tamakawa, a Research Specialist of ICHARM.

Day 2: 1) Introduction of Metadata; 2) Introduction of the DIAS In-situ data metadata registration system and hands-on training by Dr. Hiroko Kinutani and Dr. Shie Nishikawa, Project Researchers of the University of Tokyo; 3) Overview of CMIP5 GCM Selection and Bias correction; 4) Introduction of methods for CMIP5 model selection and hands-on training; 5) Introduction of methods for CMIP5 precipitation bias correction and hands-on training by Tamakawa.

Including not only lectures but also hands-on training, the workshop was helpful to increase the understanding of in-situ data management and the analysis method of the climate change model using DIAS. Throughout the training, the participants were very interested in the DIAS system and asked many questions about its contents. Moreover, we received requests for permission to use DIAS even after the training.

On February 6, the 5th Disaster Management Collaboration Dialogue between Myanmar and Japan was held in Nay Pyi Taw, Myanmar. This conference was co-sponsored by the Ministry of Land, Infrastructure, Transport and Tourism in Japan and DDM in Myanmar. Director generals or directors participated from DWIR, DMH, IWUMD, DDM, and Japanese organizations including ICHARM. ICHARM reported the current activities in Myanmar and the results of the DIAS training. Besides this meeting, ICHARM had a meeting with each organization involved in the project and exchanged opinions about the next platform meeting.

ICCHARM will continue to contribute to the prevention and reduction of water-related disasters in Myanmar by assisting the platform in various activities.



Participants of the DIAS training
DIAS トレーニングの参加者



Training at YTU
YTUでのトレーニング



Deputy Director Sawano at the 5th Disaster Management
Collaboration Dialogue between Myanmar and Japan
第5回ミャンマー防災協働対話における報告

(Written by Hirosato Yoshino) |

The 3rd plenary meeting of IFI Platform in the Philippines / フィリピンにおける第3回 IFI プラットフォーム全体会合

The 3rd plenary meeting of the Platform on Water Resilience and Disasters was held in Quezon City of Metro Manila, the Philippines. The meeting gathered 78 participants from 20 organizations including the headquarters and regional offices of the Department of Science and Technology (DOST), the Department of Public Works and Highways (DPWH), the Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA), the Office of Civil Defense (OCD), the Department of Environment and Natural Resources (DENR), and the National Economic and Development Authority (NEDA), as well as Davao City Office, University of the Philippines, University of Tokyo and Typhoon Committee. ICHARM Director Toshio Koike and some researchers were also among the participants.

The meeting reviewed and shared information on the Platform activities implemented so far, such as data integration, real-time flood forecasting, climate change impact assessment, and contingency planning. They also discussed future activities particularly on organizing damage data collection in barangays (the minimum administrative unit of the Philippines), strengthening cooperation among municipalities including Davao to prepare more effective climate change adaptation measures, and developing a real-time flood forecasting system in the Cagayan River basin.

The discussions were very positive and productive throughout the meeting together with governmental officials and researchers, aiming at the risk reduction of water-related disasters, which will certainly lead to more active implementation of the interagency activities led by the Platform.

2019年2月7日にフィリピンのメトロマニラ・ケソン市において「第3回水のレジリエンスと災害に関するプラットフォーム全体会合」が開催され、科学技術省 (DOST)、公共事業道路省 (DPWH)、フィリピン大気地球物理天文局 (PAGASA)、市民防衛局 (OCD)、環境天然資源省 (DENR)、国家経済開発庁 (NEDA) などの本部および地方局やダバオ市、フィリピン大学、東京大学、台風委員会、ICCHARM など計20の機関から78名の政府関係者や研究者が参加しました。会合では、これまでのデータ統合、リアルタイム洪水予測、気候変動影響評価、地域危機管理計画に関するプラットフォームの活動を共有するとともに今後の活動の展開について議論しました。特に最小の行政単位であるバラングアイの被害データの収集やダバオ市における気候変動対策への連携強化、カガヤン川流域におけるリアルタイム洪水予測システムの開発などが今後の活動として具体的に議論されました。会合全体を通して、フィリピンの政府関係者や研究者が水災害リスクの軽減のために積極的かつ建設的な議論を交わしたことから、各組織の垣根を超えたプラットフォームの活動が今後より一層活発に取り組みられていくことが期待されます。



Participants in the 3rd Plenary Meeting of the IFI Platform
第3回 IFI プラットフォーム全体会合の参加者

(Written by Mamoru Miyamoto) |

The 3rd plenary session for the Platform on Water Resilience and Disasters in Sri Lanka / スリランカにおける「第3回・水のレジリエンスと災害プラットフォームに関する会議」の開催

2017年8月24日の第1回会議、2018年3月28日の第2回会議に続き、2019年2月20日、スリランカ・コロンボのかんがい局で第3回・水のレジリエンスと災害プラットフォームに関する会議が開催されました。このプラットフォームの会議にはスリランカのかんがい局、国家建築研究所 (NBRO)、災害管理センター (DMC)、気象局 (DOM)、メガポリス西部開発省、マハウエリ管理局やスリランカ土地開拓・開発公社 (SLLRDC) といった洪水に関係する機関から40名以上が参加しました。

会議では、かんがい局のS. Mohanarajah 局長が歓迎の挨拶を述べられ、ICHARM 小池俊雄センター長とメガポリス西部開発省 Srikantha Herath 教授がそれぞれ開会の挨拶を行い、ICHARM とスリランカ側の参加者から第2回会議以降の進捗について、それぞれ報告がなされました。ICHARM からは池田鉄哉 上席研究員がこれまでのプラットフォーム活動の進捗についてレビューを行うとともに、Abdul Wahid Mohamed Rasmy 主任研究員からは効果的な水資源管理に向けたリアルタイム・データの蓄積及び統合について、牛山朋来 専門研究員からはリアルタイムのアンサンブル予測について発表がなされました。ICHARM では、GRIPS 及び JICA と連携して修士・博士課程の研修プログラムを実施しており、今回の会議では、現在かんがい局で勤務している修士課程コースの卒業生 (Maheswaran Myuran 氏と Roshan Indika Jayasinghe 氏) や、現在、博士課程コースに在学中のスリランカ学生 Hemakanth Selvarajah 氏から、ICHARM で実施された研究成果についてそれぞれ発表が行われました。

その後、プラットフォームの枠組みで行う今後の活動について議論を行い、これまでモデル河川とされた3つの河川流域 (Kalu, Kelani, Malwathu 川流域) に加えてマハウエリ川流域も対象とすることとしました。

なお、会議に先立ち、2月18日には、かんがい局 S. Mohanarajah 局長と ICHARM 小池センター長とで協力協定 (MOU) の署名を行いました。MOU では、水関連災害による被害軽減を図るために協働して研究の促進を図ることとし、具体的な協力活動として、洪水観測とアンサンブル洪水予測、気候変動の下での統合的水資源管理 (IWRM) のモデル開発、能力開発と研修等を行うこととしました。

今回のプラットフォーム会議での議論を踏まえ、Rasmy 主任研究員と Hemakanth 氏はマハウエリ管理局を訪問し、マハウエリ川流域にお

The 3rd Plenary Session for the Platform on Water Resilience and Disasters in Sri Lanka was held on February 20, 2019, at the Irrigation Department in Colombo, Sri Lanka, following the 1st session on August 24, 2017, and the 2nd one on March 28, 2018. More than 40 experts participated from the flood-related government organizations of Sri Lanka including the Irrigation Department, the National Building Research Organization (NBRO), the Disaster Management Center (DMC), the Department of Meteorological (DOM), the Ministry of Megapolis and Western Development, the Mahaweli Authority of the Ministry of Mahaweli, and the Sri Lankan Land Reclamation and Development Corporation (SLLRDC).

The session started with the welcome speech by Eng. S. Mohanarajah, the Director General of the Irrigation Department, and then the opening remarks delivered by Prof. Toshio Koike, the Director of ICHARM, and Prof. Srikantha Herath, the Team Leader of the Ministry of Megapolis and Western Development. ICHARM researchers and Sri Lankan experts presented the recent and prospective progress in the platform activities. From ICHARM, Chief Researcher Tetsuya Ikeda delivered a presentation on the review of the progress on the Platform activities in Sri Lanka, then Senior Researcher Abdul Wahid Mohamed Rasmy on real-time data archiving and integration for effective water resources management, and Research Specialist Tomoki Ushiyama on real-time ensemble forecasting. ICHARM has been providing master's and Ph.D. programs jointly with GRIPS and JICA. In this session, engineers from the Irrigation Department, Mr. Maheswaran Myuran and Mr. Roshan Indika Jayasinghe, who graduated from the master's course, presented their research achievements made during the study at ICHARM. Mr. Hemakanth Selvarajah, a Sri Lankan engineer presently enrolled in the Ph.D. program, also spoke on his ongoing research at ICHARM.

The participants also discussed the future activities under the framework of the Platform for three previously selected river basins (i.e., Kalu, Kelani, and Malwathu river basins), as well as for the Mahaweli River basin, which was additionally selected as a target river basin during this session.

Prior to this session, on February 18, Eng. S. Mohanarajah and Koike signed the Memorandum of Understanding (MOU) between the Irrigation Department and ICHARM. The MOU aims to promote joint research for reducing water-related disasters in the areas requiring close bilateral cooperation, such as flood monitoring, ensemble flood forecasting, the Integrated Water Resources Management (IWRM) modeling under changing climate conditions, and capacity building and training.

Following the discussion at the plenary session, Rasmy and Mr. Hemakanth visited the Mahaweli Authority and discussed the development of the Platform activities in the Mahaweli River basin. Consequently, both sides agreed to share data and knowledge by organizing meetings and workshops on a regular basis in the future.

Reference:

http://www.icharm.pwri.go.jp/special_topic/20190220_3rd_plenarysession_PWRD.html



Signing of MOU by Prof. Koike, Director of ICHARM and Eng. S. Mohanarajah, Director General of the Irrigation Department ICHARM 小池センター長とかんがい局 S. Mohanarajah 局長による MOU の署名



Group photo of the session participants
会議参加者による集合写真

(Written by Tetsuya Ikeda)

けるプラットフォーム活動について議論し、今後、定期的な会合・ワークショップを行うことによって、将来にわたりデータや知識の共有を図っていくことを合意しました。

関連サイト：

http://www.icharm.pwri.go.jp/special_topic/20190220_3rd_plenarysession_PWRD_j.html

■ Training & Education

The 12th ICHARM Follow-up Seminar in Nepal / 第12回 ICHARM フォローアップセミナーの開催（ネパール、カトマンズ）

The 12th ICHARM Follow-up Seminar was held in Kathmandu, Nepal, on January 23, 2019. The seminar is organized once a year overseas, inviting graduates of ICHARM's training courses, mainly those from the master's program. Following the seminar in Myanmar last year, this year's seminar was held in Nepal with a total of 25 participants including ten graduates (nine from the master's course and one from a short-term training course) and a dozen of representatives from governmental organizations of Nepal, the Embassy of Japan, and a JICA office.



Group photo at the 12th ICHARM Follow-up Seminar
第12回 ICHARM フォローアップセミナー参加者集合写真

The seminar opened with welcome remarks by Prof. Yoshiyuki Imamura, the Director for Special Research of ICHARM. Then, opening remarks were made by Mr. Yuzo Yoshioka, the Counselor of the Embassy of Japan in Nepal, Ms. Yumiko Asakuma, the Chief Representative of JICA Nepal Office, Mr. Pradeep Thapa, the Deputy Director General of the Department of Water Resources and Irrigation (DWRI), and Mr. Raju Acharya, a Senior Divisional Engineer of the Water Resources Research and Development Center. After the opening ceremony, a series of presentations were delivered by ICHARM researchers, starting from Imamura, and then Prof. Shinji Egashira, the research and training advisor, and Senior Researcher Badri Bhakta Shrestha. Dr. Krishna Raj Pathak and Mr. Chuda Raj Dhakal,



Interactive session between Prof. Egashira and the graduates at the seminar
江頭指導監、帰国研修員との質疑応答

2019年1月23日、第12回 ICHARM フォローアップセミナーがネパールのカトマンズで開催されました。同セミナーは、主に修士課程の修了者を対象にしたもので、年1回で開催されます。今年は、昨年のミャンマーに引き続きネパールで行われ、10名の帰国研修員（修士課程9名、短期研修1名）と、関係政府機関、日本大使館と JICA 事務所の方々にもご出席いただき、総勢25名が参加しました。

セミナーでは、今村能之特別研究監の歓迎挨拶の後、在ネパール日本大使館の吉岡雄三参事官、JICA ネパール事務所の朝熊由美子所長、エネルギー・水資源・かんがい省水資源・かんがい局の Pradeep Thapa 副局長、そして同省水資源調査開発センターの Raju Acharya 上級エンジニアからご挨拶をいただきました。その後、ICCHARM から今村特別研究監、江頭進治研究・研修指導監、バドリバクタ シュレスタ主任研究員、またネパール側からは Krishna Raj Pathak 上級エンジニア（水資源・かんがい局）、Chuda Raj Dhakal 上級エンジニア（同左）、そして Durga Prasad Sangraula 教授（Tribhuvan 大学）による講演がありました。続いて、帰国研修員による発表が行われ、それぞれが現場で取り組んでいる業務の成果や、各自が経験している同国の水害リスクマネジメントの現状や課題について、報告がありました。日本で学んだ技術を使用した業務の取り組み、住民が参加した護岸工事、また河川流域を共有するインドとの情報共有の課題が挙げられるなど、各々が現場で奮闘、活躍している様子がかうかえました。

今回は、初めてネパール帰国研修員が一堂に会す機会であることに加えて、指導教官の一人である江頭指導監が参加したこともあり、参加した帰国研修員からは、「元研修員同士間で情報共有ができるよい学びの機会になった」、「業務にあ

たる上でモチベーションが上がった」、「ICCHARMの博士課程への意欲が高まった」、「先生方の講演が充実していた」、「もっと時間が欲しかった。2日間のセミナーにしてはどうか」などの前向きなコメントが寄せられました。また、帰国研修員が懇親会を主催し、セミナー外でも、先生方を囲んで意見を交わす機会がもたれ、ICCHARMでのプログラムが人的ネットワークを構築する礎になっていることがわかりました。

翌24日は現地視察を行い、カトマンズから東へ車で2時間ほどのところにあるカブレ市を訪ねました。水資源・かんがい局カブレ事務所で管内及び水災害の概要の説明の後、ジク川（Jhiku River）の現場では、モンスーンシーズンに地滑りが発生し、土砂を含んだ大量の水が流下、両岸にある畑地に氾濫するとの説明がありました。現状を訴える地元住民や現場職員と、その対応策についてコメントする江頭指導監らICCHARMの訪問チームとの橋渡し役として活躍したのが帰国研修員でした。日本で勉強し、かつネパールの現状を知る彼らが、今後同国の水災害軽減に向けた将来に必要な人材であることはまちがいない、引き続きこのような人材の育成が望まれます。

最後にフォローアップセミナー及び現地視察に参加、案内していただいた方々からの多大なご協力に対して感謝します。

Senior Divisional Engineers of the DWRI, and Prof. Durga Prasad Sangraula of Tribhuvan University delivered lectures. After those experts, the graduates of ICHARM's training courses presented their ongoing or past activities including the current conditions and challenges in flood risk management of Nepal and achievements made through projects in which they were involved. The presentations showed that they are making great efforts in solving problems arising one after another and leading projects to which they are assigned. Some reported on the use of knowledge and technology learned in Japan for more effective operations and the organization of a revetment work project with community participation. Others talked about their struggles such as having issues with India over sharing hydrological information on a transboundary river basin.

The event was very special to the graduates because it was the first occasion after the graduation for them to meet all together in one place, particularly with the presence of Egashira, the primary faculty member during their study at ICHARM. Satisfied with the seminar, they made many positive comments: "The seminar was a good learning opportunity to share knowledge and experiences with other graduates," "I got more motivated to do my work," "The seminar encouraged me to try the Ph.D. program of ICHARM," "I'm very much satisfied with the lectures," "The seminar was too short; it's worth considering a two-day seminar," etc. In addition, the graduates hosted a dinner gathering, even where they continued discussions and exchanged ideas and views with ICHARM staff. This clearly shows that ICHARM's training programs lay the foundation for building and expanding a professional network among graduates and between them and ICHARM.

On the next day, the ICHARM staff made a field trip to Kavre, which is about a two-hour drive to the east from Kathmandu. On the way, they visited the Kavre field office of the Department of Water Resources and Irrigation, and received briefing on the region and its water-related disasters. The Jhiku River was the next destination, where Kavre field office staff and community people explained that landslides occur in monsoon seasons and a large volume of floodwaters containing sediment run downstream and flood agricultural fields on both sides of the river. While the community people and the field staff explained the difficulties they face and Egashira provided advice to them, it was the graduates that played an important role in bridging their gaps. There is no doubt that human resources like these graduates, who studied in Japan and know the challenges in Nepal, are essential in reducing water-related disasters in the country. Continued efforts should be made to maintain the training courses of ICHARM for producing more professionals in disaster management.



The graduates explain the situation to ICHARM team.
ICCHARM 訪問チームに状況を説明する帰国研修員

ICCHARM would like to thank all the people who participated in the follow-up seminar and supported the field visit.

(Written by Satsuki Yanagihara)

Educational program updates / 修士課程研修 活動報告

ICCHARMでは2007年以降、JICA、GRIPSと共同して、主に外国人行政職員を対象として、約1年間で学位取得できる修士コースを設けています。例年、10月から翌年3月の6ヶ月は主に講義が行われ、4月から8月にかけては論文執筆に取り組みます。本年、12月からは実習科目「Practice on Open Channel Hydraulics」、1月からは実

Since 2007, ICHARM has provided a one-year master's program in collaboration with JICA and GRIPS, which is designed mainly for officers of overseas government organizations. Students mainly attend lectures in the first six months from October to March and work on their individual theses in the second six months from April to August.

Practical classes, "Practice on Open Channel Hydraulics" and "Computer Programming," started in December and January. On December 26, the students practiced

hydraulic techniques at an outdoor experimental facility located in a suburb of Tsukuba, a local city where ICHARM is located. They also attended a "Project Cycle Management" workshop from January 8 to 10

In February, "Control Measures for Landslide & Debris Flow" and "Socio-economic and Environmental Aspects of Sustainability-oriented Flood Management" started. The first of the five presentation meetings was held on the 1st, and each student explained a plan for their individual study and received advice from their supervisors and ICHARM researchers. On the 3rd and 4th, the students went on a field trip arranged by GRIPS and enjoyed Japanese culture, historical buildings, and a mechanical products factory.

From February 26 to March 1, the students visited Kochi, Kagawa, Tokushima prefectures. On the first day, they visited the Kochi University of Technology and attended a lecture on "Development of Decision making System for Water Resource Policy under Climate Change in Shikoku Area" by Prof. Seigo Nasu.

On the second day, they visited Hidaka Village to see the Nagoya chinka-bashi ("sink-bridge") crossing the Niyodo River near the village. This bridge is a unique compromise to achieve a balance between benefit and cost. It is built to provide the small, riverside community with a short cut to a national road across the Niyodo River. However, because it crosses the river at a lower height than usual for cost reduction, it goes underwater during a flood, though such a case happens not very often.

After that, the students visited the Kusaka River New Floodway Construction Site in Hidaka Village, where they entered a tunnel and took a close look at its facilities. In the afternoon, they had a lecture about "New Kochi Port Construction Plan" at New Kochi Port. Then, they moved to Mt. Godai's observation platform, where an officer of Kochi prefecture explained "Anti-Earthquake and Tsunami Triple Safety Measures at Kochi Port (Urado Bay)."

On the third day, after visiting Sameura and Ikeda dams, the students visited Manno Lake in Manno Town, Japan's largest reservoir for irrigation purposes. On the last day, they visited the Ishii Disaster Prevention Station in Ishii Town. They first received a brief lecture on the Yoshino River, one of the nation's most famous rivers, and then learned about several measures that are used in flood fighting efforts in Japan. They also had a chance to see how such measures can be applied including the ringing sand boil method and the sheet-covering approach. After that, they learned rope techniques essential in flood fighting.

All the classes ended in March, and the students now focus on the individual study including writing a master's thesis from April.

This year's field study was also fruitful thanks to the cooperation of Mr. Kuniichi Yamamoto, the Tokushima River and Highway Office of MLIT, the Departments of Land Improvement of Kagawa Prefecture, the Manno Lake Land Improvement District, and the Departments of Civil Engineering of Kochi Prefecture.



The central area of Kochi city
from Mt. Godai observation platform
五台山展望台から眺める高知市中心部



Exercise on rope work at Ishii Disaster Prevention Station
石井防災ステーションでのロープワーク実習

(Written by Tomoki Nakamura)

習科目「Computer Programming」を行いました。また、12月26日にはつくば市郊外の屋外実験施設を借りて水理学実習を行い、1月8日から10日にかけては、「Project Cycle Management」の講習を行いました。2月に入ると、「Control Measures for Landslide & Debris Flow」、「Socio-economic and Environmental Aspects of Sustainability-oriented Flood Management」の講義を開始しました。2月1日には、年間5回予定されている学生のプレゼンテーションのうちの第1回目が実施され、ICHARM 指導教官及び研究員がアドバイスをを行いました。また、学生は3日から4日にかけて、政策研究大学院大学が主催した研修旅行に参加し、歴史的建造物や企業の機器製品などの日本文化を堪能しました。

2月26日から3月1日にかけては、高知県、香川県、徳島県を訪問しました。まずは、初日は、高知工科大学を訪問して「Development of Decision making System for Water Resource Policy under Climate Change in Shikoku Area」というテーマで那須清吾教授の講義を受けました。

2日目は、高知県日高村で仁淀川に架かる名越屋沈下橋を見学しました。小規模集落が対岸の国道を利用するために架けられた橋梁で、建設費用を抑えるために低い位置に架橋されているため、増水すると橋梁自体が水面下に沈みます。平常時のみ橋梁を利用出来れば良いと割り切られて設置された橋梁で、利便性と建設費用の調和のユニークな例を学びました。次に、同じく日高村にて日下川新規放水路の工事現場を見学しました。そこでは、トンネルに入り、設備を間近で見学しました。午後からは、高知新港にて高知新港の整備計画の説明を受けた後、高知市内を一望できる五台山に移動し、高知県庁職員から「高知港（浦戸湾）の三重防護による地震・津波対策」について説明を受けました。

3日目には、早明浦ダムと池田ダムを見学した後、香川県まんのう町を訪問し、日本最大級の灌漑用ため池である満濃池を見学しました。

最終日には、徳島県石井町の石井防災ステーションで水防工法の実習を受けました。まず、吉野川の概要説明を受け、月輪工法、シート張等の水防工法を見学した後、水防活動に不可欠なロープ・ワークの実習を受けました。

3月には、講義科目の終了に伴う試験が多く実施され、4月からは本格的に研究・論文執筆に取り組むこととなります。

現地訪問のご対応を頂いた山本邦一先生、徳島河川国道事務所、香川県土地改良課、満濃池土地改良区及び高知県土木部の皆様には大変お世話になりました。ここにお礼申し上げます。

Recruiting missions (Nepal, Indonesia, and Myanmar) / リクルート活動報告 (ネパール、インドネシア、ミャンマー)

ICHARMでは、水災害・防災分野の人材育成の一環として、JICAならびにGRIPSとの協働で修士課程(1年コース)と博士課程(3年コース)を実施しています。各国での課題やニーズを把握し、同課程への理解を深めてもらい、より優秀な人材に応募してもらうことにより、人材育成の研修効果を高めることを目的として、各国の関係機関を訪問し、リクルート活動を行っています。

今年度は、8月のフィリピン訪問、12月のタイ訪問に引き続き、1月から2月にかけてネパール、インドネシア、ミャンマーの3か国を訪問しました。各国の水災害についての課題、ICHARM研修へのニーズの違い、募集及び応募に関するプロセスや状況が異なることを把握しました。さらに、ICHARM研修は通常のJICA研修と異なり応募者の中から選抜が行われる入試のプロセスがあることと、特徴である1)先進的な科学技術に基づく実践的な手法が学べること、2)GRIPSとの協力により、科学技術と政策の両方を身に付けられること、3)国土交通省の協力により、日本で実際に発生した水災害でのオペレーションや対策を直接実務者から学ぶ機会があることについて理解してもらいました。

ネパールでは、エネルギー・水資源・かんがい本省と同省の水資源・かんがい局、水文・気象局、水資源研究開発センター、そして窓口機関である財務省と連邦総務省を訪問しました。同国では、毎年水災害が多発し多くの人命が失われていることや、政府が機構改革を進めており、中央省庁のスリム化が進行中で、権限及び人材の中央から地方への移行期間であることがわかりました。今回直接各省庁・機関を訪問し、プログラムや選考についての説明をしたことで、プログラムの重要性や優秀な人材をリクルーティングする意義を伝えることができました。ネパールでは、文化的な意識が日本と近いと言われており、自然災害が多いという共通点もあることから、日本への留学希望者は多く、いずれの機関でも候補者の選定を前向きに検討するとのことでした。また、西郷正道日本大使との昼食会において、ネパールの状況を教えていただくとともに、同コースについて理解していただく機会を持つことに対してお礼を申し上げます。

インドネシアでは、公共事業・国民住宅省水資源総局、気象気候地球物理庁、国家防災庁を訪問しました。インドネシアでも、プログラムに対する関心は高い一方で、特に英語の資格要件について心配する声が多々聞かれました。しかしながら、ネパール同様、インドネシアも水災害の多い国であることから、ICHARMが提供するプログラムの重要性、有効性はよく理解されており、特に同国で進行中のIF

ICHARM offers one-year master's and three-year Ph.D. programs in collaboration with JICA and GRIPS for human resource development in the field of water-related disaster risk reduction. In an effort to improve the programs, ICHARM has been active in organizing missions to visit governmental organizations to learn issues and needs in each country, improve their understanding of the programs, and request them to select more suitable candidates for the programs. The following is a report written by the recruiting team led by the Director for Special Research Yoshiyuki Imamura on the recent missions to three Asian countries.

In this fiscal year, following the missions to the Philippines in August and Thailand in December, we visited Nepal, Indonesia, and Myanmar in January and February. Through the missions, we learned differences among countries regarding issues on water-related disasters, needs for training programs, and nomination processes. Another important task of our missions was to improve their understanding of ICHARM's graduate programs. We explained that, unlike other regular JICA training programs, the master's program of ICHARM has a screening process and may not admit all nominees to it. We also elaborated three unique features of the program, in which students will 1) learn practical solutions utilizing advanced science and technology; 2) study both science and technology and policy development with support from GRIPS; and 3) have opportunities to learn operations and measures related to water-related disasters that occurred in Japan directly from practitioners of the Ministry of Land, Infrastructure, Transport and Tourism in Japan. The following summarizes the missions to the three countries.

In Nepal, we visited the headquarters of the Ministry of Energy, Water Resources and Irrigation and its three affiliates, the Department of Water Resources and Irrigation, the Department of Hydrology and Meteorology, and the Water Resources Research and Development Center. We also paid a courtesy call on the two contact ministries, the Ministry of Finance and the Ministry of Federal Affairs and General Administration. Through the visits, we learned that many lives are lost every year due to frequent water-related disasters and also that the governmental reform is underway, streamlining the central government by transferring authority and human resources to local governments. By visiting governmental organizations and directly explaining the programs and admission process, we were able to convey the importance of the programs and the significance of nominating suitable candidates. We heard that many of their staff wish to study in Japan because they feel that their country shares similar cultural contexts and has common experiences of frequent natural disasters with Japan. Every organization responded to us positively about nominating candidates for the programs. In addition, we would like to express our gratitude to Mr. Masamichi Saigo, the Japanese Ambassador to Nepal, for giving us an opportunity to explain ICHARM's programs as well as providing us with information on Nepal at a luncheon meeting.



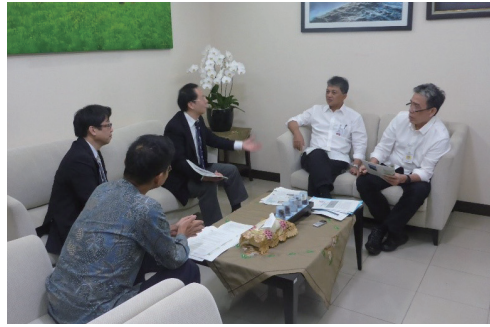
Luncheon meeting with Ambassador to Nepal Masamichi Saigo (center left) and Second Secretary Yoshiaki Sando (left end) and a graduate of the ICHARM master's program (right end)



Meeting with Deputy Director General Pradeep Thapa of the Directorate of Water Resources and Irrigation of Nepal (center) and a graduate of the ICHARM master's program (left end)

水資源かんがい局副局長 Pradeep Thapa 氏 (中央) への説明。
左端は帰国研修員。(ネパール)

In Indonesia, we visited the Directorate General of Water Resources in the Ministry of Public Works and Housing, the Meteorology Climatology and Geophysical Agency, and the National Agency for Disaster Management. While they showed us much interest in the program, concerns over the English eligibility requirement were frequently heard. However, as with Nepal, since Indonesia is also a country with frequent water-related disasters, the importance and effectiveness of the programs provided by ICHARM are well understood. In particular, since human resources are a crucial factor for the success of the International Flood Initiative (IFI), which is currently underway in the country, both parties agreed on the necessity for human resource development.



Meeting with Director General Hari Suprayogi of the Directorate General of Water Resources of Indonesia (center right)
水資源総局局長 Hari Suprayogi 氏(中央右)らへの説明(インドネシア)

In Myanmar, we visited the Directorate of Water Resources and Improvement of River Systems in the Ministry of Transportation and Communication, the Department of Meteorology and Hydrology, and the Irrigation and Water Utilization and Management Department in the Ministry of Agriculture, Livestock and Irrigation. All the ministries showed positive responses to sending their staff to the master's program, and some had already nominated candidates. Similarly to Indonesia, they mentioned concerns about the English qualification requirement, which were not easy for Myanmar government officials to meet in general. Fees for English examinations such as TOEFL are another problem; they are very costly for them. While fully aware that the management of water-related disasters is an urgent issue, Myanmar is suffering from a shortage of human resources, and thus there is a high demand for human resource development. The visits were fruitful in forming a common understanding between the Myanmar government, which sends officials, and ICHARM, which receives them, through the face-to-face meetings.



Meeting with Deputy Director General Htun Lwin Oo of the Directorate of Water Resources and Improvement of River Systems of Myanmar (center left)
水資源河川系開発局副局長 Htun Lwin Oo 氏(中央左)らへの説明(ミャンマー)

During the missions, we also had meetings with Japanese embassies, JICA offices, and JICA experts assigned to different ministries of different countries. We would like to express our deep appreciation for their support, such as providing us with the views of governmental agencies to the training programs and accompanying us to some agencies. We are deeply impressed with their unwavering dedication to human resource development with careful considerations of the situations in whatever country they are assigned to. We would like to continue to treasure this valuable network.

The countries we visited are all very interested in training programs in the field of disaster management, for they suffer significantly from frequent disasters. They totally agree with us on the necessity of human resource development to implement effective disaster management. From the series of missions, we have come to learn commonalities and differences among the countries we visited, which will help us improve our training programs to be more practical for those countries. The network that we have built through the visits to the governmental agencies is also a precious result of the missions. We would like to use all the achievements we made through the missions to realize more effective human resource development, which will lead to the reduction of water-related disasters in each country.

(Written by Satsuki Yanagihara)

(International Flood Initiative) において人的資源は要であり、人材育成の必要性についての共通理解を確認することができました。

ミャンマーでは、運輸省水資源河川系開発局、気象・水文局と農業畜産かんがい省かんがい水利利用管理局を訪問しました。いずれの省庁においても、修士プログラムに職員を送ることについて前向きな反応があり、すでに今回応募する候補者を選考しているところもありました。インドネシアと同様に、英語の資格要件がミャンマーの公務員にとっては厳しいことや、TOEFLなどの英語資格試験の受験料が職員にとっては大きな負担になることなど、懸念の声も聞かれました。また、水災害が大きな課題となっている一方で、人材が不足しており人材育成のニーズが高いこともわかりました。今回直接訪問したことで、学生側を迎え入れる側と職員を送り出す側双方の共通理解が進みました。

また、今回のリクルート活動では、各国の日本大使館、JICA 事務所の研修担当者、そして省庁に配属されている JICA 専門家を訪問する機会も持つことができました。各国の研修事業にかかる事情や現状を教えてください、各省庁への訪問に同行していただくなど、ご支援をいただきましたことに深く感謝申し上げます。いずれの国でもその政府の状況を見ながら人材育成について熱心に取り組んでおられ、今後もこのネットワークを大切にしていきたいと考えています。

さらに、いずれの国においても、その災害の多さから、防災分野の研修には高い関心があり、同分野の人材育成の必要性については疑いの余地がないという認識で一致しました。今回の訪問で、各国に共通した状況、反対にそれぞれが抱える事情も明らかになり、ICCHARM として対応方法を考える材料を得ることができました。また、各国政府の方々に直接会い、関係作りができたことも成果として挙げられます。今回のリクルート活動の成果により、人材育成の効果が高まり、各国での水災害の軽減につながることを期待されます。

Workshop on Flood Forecasting in RID, Thailand/ タイ王立灌漑局の洪水予測ワークショップ

2019年3月4日から8日にタイの王立灌漑局 (RID) が主催する洪水予測に関するワークショップが開催され、宮本守研究員と中村要介交流研究員が講師として参加しました。ワークショップには、タイの王立灌漑局の本部および8つの地方事務所 (水文センター)、タイ気象局から計33名が参加し、洪水予測に関する講義および ICHARM が開発した統合洪水解析システム (IFAS) と降雨流出氾濫 (RRI) モデルのトレーニングが行われました。トレーニングの前半ではタイの河川流域のサンプルデータを用いたトレーニングを実施し、モデルの構築や入力データの設定、結果の表示、水文パラメータのキャリブレーションを行いました。トレーニングの後半には各地方事務所の実務者がそれぞれの管轄内の流域に対する IFAS の解析実行と IFAS Calibrator を用いた最適パラメータの決定を行いました。さらに、いくつかの流域ではキャリブレーションとは別の洪水に最適パラメータを適用することで、再現性の検証を行いました。ワークショップ最終日には、RRI モデルの概要説明とデモンストレーションを行い、特に下流部に低平地を含む流域において RRI モデルによる洪水氾濫予測が効果的であることを紹介しました。

各地方事務所からの参加者は管轄流域における洪水予測の必要性を深く理解しており、洪水予測技術に対する関心も高く、非常に熱心に取り組んでいました。ワークショップでは、今後の雨季に向けたより実践的な洪水予測のためのトレーニングやタイ気象局におけるトレーニングの可能性も議論されるなど、ICHARM に対する期待の高さが伺えました。

ICHARM Researcher Mamoru Miyamoto and Exchange Researcher Yosuke Nakamura attended a workshop on flood forecasting hosted by the Royal Irrigation Department (RID) on March 4-8, 2019, in Bangkok, Thailand. The purpose of their visit was to provide a lecture on flood forecasting and training on the operation of the Integrated Flood Analysis System (IFAS) and the Rainfall-Runoff-Inundation (RRI) model developed by ICHARM. The workshop was attended by 33 participants from the headquarters and regional offices of RID and the Thai Meteorological Department (TMD). In the early part of the training, the participants learned about model development, setting of input data, display of results, and calibration of hydrological parameters by using sample data prepared by the Thai side. In the latter part of the training, they learned how to operate IFAS by using it for selected basins in Thailand through conducting simulations and determining optimum parameters using the IFAS calibrator. In addition, the optimized parameters were validated for reproducibility by applying them to flood events in different basins. On the last day of the workshop, the demonstration of the RRI model was performed by the ICHARM researchers, who explained that the RRI model is particularly effective for flood inundation forecasting for basins with floodplains in their lower reach.

Highly aware of the necessity of flood forecasting, the participants were very interested in the technologies of flood forecasting and worked on the training diligently. High expectations for ICHARM were also felt from them, who started asking about the possibility of further practical training toward the next rainy season and another training at TMD during the workshop.



Scene of workshop
ワークショップの様子



Participants in the workshop on flood forecasting
洪水予測ワークショップの参加者

(Written by Mamoru Miyamoto)

Research

— 特別寄稿 —

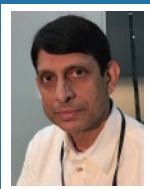
ICHARM では、日本及び世界各国より多くの研究者・インターン学生を受け入れています。2019年1月より、Dr. K. Abdulla Bava が外国人受け入れ研究員として、ICHARM で研究を行っています。Dr. Bava はインド Kerala 州の出身で、昨年8月に同州で発生した甚大な洪水被害についての記事を投稿いただきました。

- Special contribution -

ICHARM accepts researchers and internship students from home and abroad.

Dr. K. Abdulla Bava, who is from the Kerala State, India, has been studying at ICHARM as a visiting foreign researcher since January 2019.

He kindly contributed an article to our newsletter regarding the flood which occurred in his native state last August.



Great flood of Kerala in August 2018

K. Abdulla Bava, Visiting Foreign Researcher

The southernmost state of India, Kerala is blessed with 44 rivers, 1,500 km of canals, 30 lakes and 580 km of sandy beaches. Because of its magnificent natural landscapes and fertile valleys, it is often called, God's Own country. Kerala (38,863 km²) is situated between the Arabian Sea to the west and the Western Ghats to the east. Kerala is a narrow stretch of land with a length of 580 km and the width varies between 35–120 km in the southern tip of Indian subcontinent (Fig. 1).

Kerala receives an average annual rainfall of 3,100 mm, while the cool mountainous eastern highlands of Idukki district – comprising Kerala's wettest region – receive more than 5,000 mm of orographic precipitation. Kerala's rains are mostly the result of seasonal monsoons. As a result, Kerala averages some 120–140 rainy days per year.

From 8 August 2018, severe floods affected the state of Kerala, due to unusually extreme rainfall event during the monsoon season (Fig. 2). It was the worst flood in Kerala in nearly a century. Over 483 people died, and 14 are missing. About a million people were evacuated to 3,200 relief camps, 50,000 houses washed away, 80,000 km roads and 221 bridges damaged. More than 300,000 farmers affected. It is estimated that a total of US\$4.25 billion is required to rebuild.

Kerala received extreme heavy rainfall (75% more than the usual) on August 8, resulting the dams filling to their maximum capacities; in the first 24 hours, the state received 310 mm (12 inches) of rain. Almost all dams had been opened since the water level had risen close to overflow level, caused flooding in local low-lying areas. Kerala has 44 rivers carrying 78,000 MCM of water a year. The state has 57 dams with a cumulative capacity of 5,200 MCM of water. For the first time in the state's history, 35 of its 54 dams had been opened.

Usually during monsoon (June – September), Kerala receives around almost 85% of the annual rainfall (Monthly average: June 653.2 mm; July 687.2 mm; August 404.7 mm; September 252.3 mm). In 2018 Kerala received an excess amount of rain during June and July and all the dams were almost 70 to 80 percentage full at the end of July.

When an unprecedented rainfall occurred from August 9 through 15 (Fig. 3), there was no space in the dams to contain the excess water which forced the authorities to open all the dams to release the water to a safer level. All five overflow gates of the Idukki Dam were opened at the same time, and for the first time in 26 years 5 gates of the Malampuzha dam of Palakkad were opened. Heavy rains in Wayanad and Idukki have caused severe landslides and have left the hilly districts isolated.



Fig. 1 Location map of Kerala

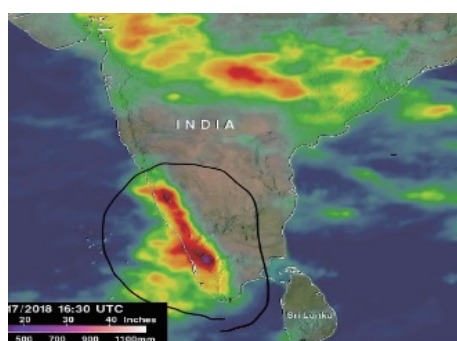


Fig. 2 Satellite image of rainfall (Courtesy: NASA)

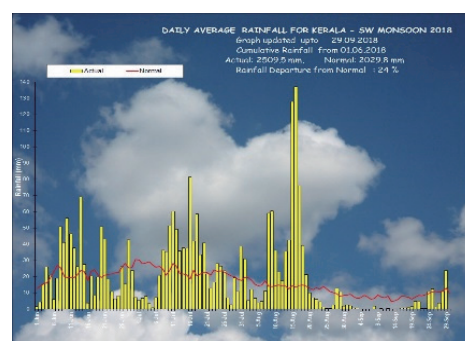


Fig. 3 Monsoon rainfall of 2018 (Courtesy: IMD)

Though Kerala's 44 rivers are small, all are originated from Western Ghats and rallied in the same geographic setting and join in Arabian sea in a short time span. Due to extreme rainfall event all the rivers were flooded altogether and made a huge devastation in the whole state due to its combined effect (Photos 1-4). This is very unusual and unexpected compared to usual floods in one or few river basins together.

A preliminary analysis of rainfall and discharge data of the longest river of Kerala, Periyar river using RRI model at ICHARM showed that the river discharge has raised up to 3,665 m³/s during the flood (Fig. 4)

Extreme rain event for a week is the primary factor contributing to the extreme floods in the State. It is assumed that other factors include inadequate land use practices and mismanagement of the water resources and forests. The human interventions contributing to flood problems are predominantly in the form of reclamation of wetlands and water bodies, change in land use pattern, establishment of more and more settlements, deforestation in the upper catchments etc.

It is observed that the dam management practices should be examined and revised, flood forecasting/ monitoring, risk management system should be implemented, and river basin based Integrated Water Resource Management should be implemented to avoid /reduce future flood risk in Kerala.

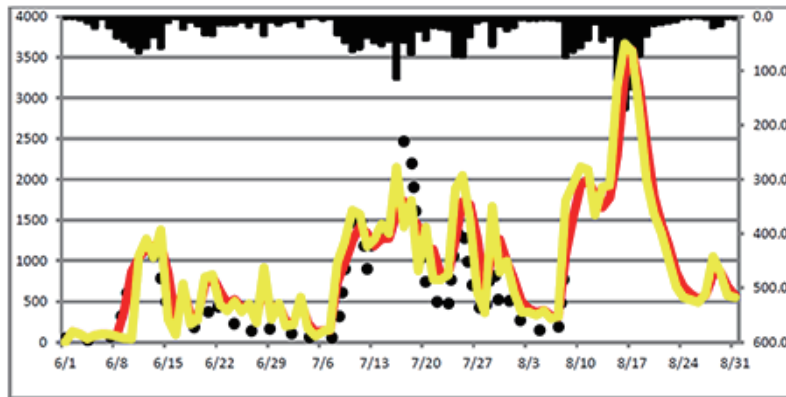


Fig. 4 River discharge simulation using RRI for Periyar river



Photos 1 – 4 Flood situations of Kerala state in August 2018 (Courtesy: Madhyamam daily)

Introduction of ICHARM research projects / 研究紹介

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

そのうち、研究としては

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

本号では、Robin Kumar Biswas 専門研究員の行っている研究「Sediment transport and channel changes in water related disaster prediction」を紹介し

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

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

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

This issue introduces one researcher as listed below:

Robin Kumar Biswas, Research Specialist

Sediment transport and channel changes in water related disaster prediction



Sediment transport and channel changes in water related disaster prediction

Robin Kumar Biswas, Research specialist
 ロビン クマー ビスワス 専門研究員

Timeliness of decision making which is very important for managing disasters is largely influenced by forecasting of hazards along with its accuracy. In the cases of water related disasters, riverbed evolution corresponding to the mode of sediment transport often jeopardize both prediction and accuracy especially in rivers where channel changes is a common phenomenon. In addition, riverbank erosion inflicts additional peril every so often to the people living along the riverbank. Therefore, one of the objectives of this research is to improve the prediction of water related hazards by integrating the knowledge of sediment hydraulics and field observations in numerical model following the procedure as described below in Fig. 1.

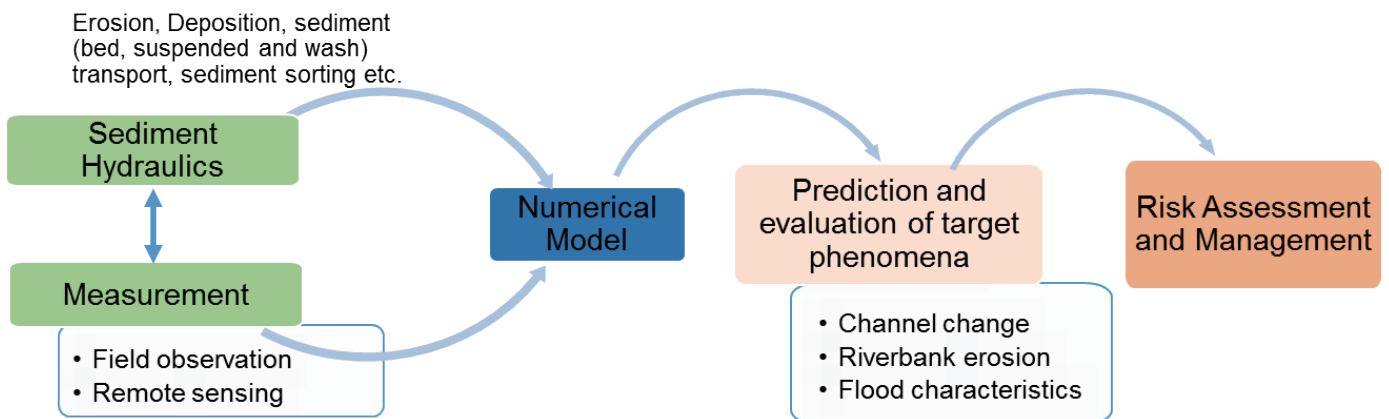


Fig. 1 Method for disaster prediction considering sediment issues

Riverbank erosion is one of the critical water related hazards facing by many countries of the world, for example Bangladesh. According to the World Bank report of 2015, in last 40 years about 1 million people are displaced and about 1000 km² arable land and 50 km² of homestead are engulfed by Brahmaputra River in Bangladesh. Apart from the direct land loss, in many cases channel changes cause to intensify flooding situations. In addition, riverbed evolution along with its spatial and temporal changes is one of the root causes for deterioration of monitoring performance of water level gauge.

It is customary to use numerical models such as iRIC (International River Interface Cooperative) to predict riverbed evolutions and channel changes considering bed and suspended sediment transport. The reality of typical channel changes in Brahmaputra River in Bangladesh is shown in Fig. 2, where a significant proportion of the total sediment is transported as wash load (Yorozuya et al., 2019) besides bed and suspended sediment. The impact of such channel changes are shown in Fig. 3. Efficient handling of this kind of situations requires numerical model equipped with facilities for modelling wash load. The utilization of the potential of satellite imageries in conjunction with field observations may also be very pragmatic in this regard.

Considering all these Issues, this research focuses on to acquire suitable knowledge and information for providing support to the prediction of water related hazards and reduction of the associated risks.

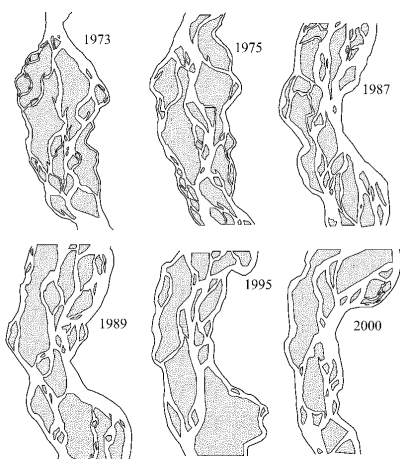


Fig. 2 Typical channel changes in Brahmaputra River



Fig. 3 Infrastructures under devastations due to channel change in Brahmaputra River

Information Networking

Typhoon Committee-related activities (Jan – Mar 2019)

-- the 51st session in China and a workshop on IFI platform in the Philippines -- / 1月～3月の台風委員会関連活動

2019年2月25日から3月2日にかけて中国・広州において、台風委員会 (TC) 第51回総会が開催され、12の国と領域 (日本、米国、韓国、中国、香港、マカオ、マレーシア、フィリピン、ベトナム、タイ、ラオス、カンボジア) と2つの国際機関 (WMO、ESCAP) から約150名が参加しました。日本からは気象庁、国土交通省そして ICHARM から徳永良雄 首席研究員、池田鉄哉 首席研究員、富澤洋介 主任研究員が参加しました。また、オブザーバーとして台風委員会への加盟手続き中のインドネシアからも気象気候地球物理庁長官らが参加しました。

総会では専門家による技術報告、気象、水文、防災部会の活動及び予算計画の説明、その他台風委員会の運営に関して協議が行われ、最終日に最終報告としてとりまとめのうえ、参加者により承認されました。徳永 首席研究員は水文部会の議長として2018年度の活動について報告を行ない、併せて4年間に渡る水文部会議長としての活動に対する各国及び台風委員会事務局の協力に謝意を表しました。これに対し、諮問委員会議長のアメリカ代表であるレイモンド・タナベ氏から4年間に渡る徳永 首席研究員の議長としての貢献を讃えるコメントがありました。また、総会終盤には参加者は広東省気象局の見学を行いました。

今回の会合を通じ、ICHARM に関係するものとして以下の成果が得られました。

1) 水文部会において日本が主導する2つの新規プロジェクト (AOP6: Flood Risk Watch Project for Life-saving, AOP7: 水のレジリエンスと災害に関するプラットフォーム) の活動内容と、その予算が承認された他、継続プロジェクトとして地域強じん化のためのフラッシュフラッド情報プロジェクトの予算が承認されました。

2) 第53回総会までの期間の水文部会議長として、池田 首席研究員が承認されました。

今後の台風委員会の主な予定として、6月に韓国・ウルサンにおいて運営諮問部会 (及び防災部会)、11月4日～7日に米国グアムにおいて第14回統合ワークショップ、来年2月下旬に香港において第52回総会が、そして第53回総会は2020年度に日本で開催されることが決定されました。

これに先立つ2月7日には水文部会メンバーがフィリピン・マニラにおいて開催されたIFI会議にオブザーバーとして参加し、ICHARM が支援してきたフィリピン共和国の

The 51st Annual Session of the Typhoon Committee (TC) was held from February 25 to March 2, 2019, in Guangzhou, China. About 150 participants gathered from 12 nations and territories (Japan, the United States, Korea, China, Hong Kong, Macau, Malaysia, the Philippines, Vietnam, Thailand, Laos, and Cambodia) and two international organizations (WMO, ESCAP)*. ICHARM sent Chief Researchers Yoshio Tokunaga and Tetsuya Ikeda and Senior Researcher Yosuke Tomizawa to join other experts from the Japan Meteorological Agency and the Ministry of Land, Infrastructure, Transport and Tourism of Japan. In addition to the member countries, representatives from Indonesia also attended the meeting as observers including the head of BMKG*. The country is now in the process of applying for membership in TC.

WMO: World Meteorological Organization

ESCAP: United Nations Economic and Social Commission for Asia and the Pacific

BMKG: Badan Meteorologi, Klimatologi, dan Geofisika in Indonesian; Indonesian Agency for Meteorology, Climatology and Geophysics in English

The annual session consisted of technical reports by experts and presentations on activities and budget plans by the three Working Groups of Meteorology, Hydrology, and Disaster Risk Reduction, as well as discussions on TC's management issues. All the reports and presentations were compiled in the final report, which was presented on the last day of the session and approved by the participants. As the chair of the Working Group of Hydrology (WGH), Tokunaga reported WGH's activities implemented in 2018 and expressed sincere appreciation to the member countries and the TC secretariat for their kind cooperation. Mr. Raymond Tanabe, a representative of USA, praised his four-year contribution as the chair. Besides the session, an institutional tour to the Guangzhou Meteorological Observation Centre was arranged for the participants.

Among the outcomes of the session, the following are particularly significant for ICHARM:

1. The session approved the action and budget plans for two new projects of WGH led by Japan: the Flood Risk Watch Project for Life-saving (AOP6) and the Platform on Water Resilience and Disasters under IFI (AOP7). They also approved the action and budget plans for an ongoing project, Flash Flood Risk Information for Local Resilience (AOP1).

2. The session approved Chief Researcher Ikeda as the new chair of WGH until the 53rd session.

TC is planning to hold a series of meetings in the next couple of years. The Advisory Working Group and the Working Group of Disaster Risk Reduction will meet in Ulsan, Korea, in this coming June, and the 14th Integrated Workshop will be held in Guam, USA, on November 4-7 of this year. The 52nd Annual Session will take place in Hong Kong in February 2020, and the 53rd Annual Session in Japan in FY2020.

On February 7, in advance of the 51st session, the WGH members joined an IFI meeting held in Manila, the Philippines, to observe discussions on various topics including the progress of IFI platform activities that the country has been implementing to strengthen its flood management with support from ICHARM. On February 8, WGH held a meeting to discuss the outcomes of the IFI meeting on the previous day and AOP7 as TC cross-cutting project, especially regarding how it should be developed and how cooperation should be organized for its successful implementation.

ICHARM will continue striving to share research outcomes with other experts and

organizations through such international frameworks as the Typhoon Committee.



Group photo of TC 51 participants
第51回総会参加者全体写真

IFI プラットホーム活動の進捗状況等についての議論を見守りました。

2月8日には水文部会会合を開催し、前日に行われたIFI会議やICHARMが実施するTCプロジェクトAOP7に関して、今後の展開や連携の方法について協議を行ないました。

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



Chief Researcher Tokunaga reported the WGH activities
徳永上席研究員による WGH の活動報告



Chief Researcher Ikeda introduced IFI
池田上席研究員による IFI の紹介



WGH meeting in Manila, the Philippines
フィリピン・マニラでの WGH ミーティングの様子

(Written by Yosuke Tomizawa)

Participation in THA 2019 / タイで開かれた国際会議 THA2019 (International Conference on Water Management and Climate Change towards Asia's Water-Energy-Food Nexus and SDGs) への参加

The International Conference on Water Management and Climate Change towards Asia's Water-Energy-Food Nexus and SDGs (THA) has been organized every two years since 2015 under the collaboration of ASEAN countries through formulating ASEAN Academic Network to share research findings and experiences on irrigation and water-related disaster management among researchers and practitioners. The conference is supported by universities and research institutes of Japan, China, Korea, and Taiwan.

THA2019 was held in Bangkok, Thailand, on January 23-25, 2019. It started with the opening ceremony and keynote speeches, which were followed by 104 presentations in different sessions by professionals from ASEAN countries, Japan, China, Korea, Taiwan, and other countries regarding a broad range of topics such as water resources management, flood forecasting and warning, climate change impact assessment and adaptation measures. In his keynote speech, Dr. Somkiat Prajamwong, the Secretary General of the Office of the National Water Resources (ONWR), which was established in December 2017, spoke about integrated water resources management in Thailand led by the ONWR. Deputy Director Hisaya Sawano made a presentation on "Formulation of adaptation measures for flood management under the uncertainty of future projection" in one of the sessions, explaining the uncertainty of climate change impact assessment and the formulation of adaptation measures under this uncertainty.

On the 25th, a technical visit was organized for conference participants to see the Smart Water Operation Center (SWOC), which was established in June 2017 at the Royal Irrigation Department (RID). Workshop I (Nexus) and Workshop II (Downscaling MRI-GCM data application) were also arranged for participants. In Workshop II, Kyoto University and the Meteorological Research Institute of Japan provided downscaling training as part of the TOUGOU program.

Thailand is currently trying to improve water resources management through, for example, the establishment of ONWR. This international conference is part of

THA2019は、ASEANの各国が ASEAN Academic Networkを構築して連携し、灌漑と水の災害管理に関する科学的な知見や経験を研究者や現場技術者間で共有することを目的に2015年から2年ごとに開催しているもので、日本、中国、韓国、台湾の大学や研究機関が協力して実施しています。会議は1月23日の開会式及び基調講演に引き続き、23日と24日の両日、水資源管理や洪水予測、気候変動の影響評価及び適応策等に関し、各分科会でアセアン各国や日本、中国、韓国、台湾等から104の発表が行われました。基調講演では、タイで2017年12月に新設された組織であるOffice of the National Water Resources (ONWR)の事務局長のDr. Somkiat Prajamwongが、ONWRのもとで行われるタイの統合的水資源管理について紹介しました。澤野久弥グループ長は分科会で、Formulation of adaptation measures for flood management under the uncertainty of future projectionのタイトルで、気候変動による影響評価の不確実性と、それを前提とした適応策の考え方について発表しました。25日には2017年6月に王立灌漑局(RID)に設立されたSmart Water Operation Center (SWOC)へのTechnical Visit、Workshop I (Nexus)、Workshop II (Downscaling MRI-GCM data application)が並行して行われました。Workshop IIでは、統合プログラムの一環として、京都大学や気象研究所によるダウンスケーリン

グのトレーニングが行われました。タイでは、ONWRの新設等を通じて、より効果的な水資源管理を目指しており、この国際会議も、そのような取り組みの一環として行われるとともに、科学技術分野での国際的な交流を通して、アジアでの連携の枠組みを強化することを目指しています。

such efforts while it also contributes to strengthening collaboration among Asian countries.



Technical visit participants at the Smart Water Operation Center
スマートウォーター・オペレーションセンターの視察参加者

(Written by Hisaya Sawano)

The 3rd Indo-Japan Workshop on Disaster Risk Reduction and a field trip to Kerala State / 第3回日印防災協力会議への参加と Kerala 州への現地調査

(1) 第3回日印防災協力会議

2019年3月18日、第3回日印防災協力会議がインド・ニューデリーの Vigyan Bhawan で開催され、ICHARM から小池俊雄センター長と池田鉄哉首席研究員が参加しました。この二国間会議は2017年9月に安倍首相が訪印した際、インド政府内務省と日本政府内閣府との間で締結された防災協力覚書 (MoC) に基づき開催されています。第1回会議は2018年3月にニューデリーで開催、第2回会議は2018年10月に東京で開催されました。今回の会議では、研究所間連携、都市間連携、民間セクター間の連携の3つをテーマとしています。開会式ではインド側国家防災委員会メンバーの Kishore 氏より歓迎の挨拶が述べられ、日本代表団を代表して内閣府の中村昭裕審議官が挨拶を述べられました。また、インド側首相府首席次官補の P. K. Mishra 氏より基調講演が行われました。

午前のパラレルセッションでは、研究所間連携をテーマとして、小池センター長より ICHARM の活動と IFI の下で行う水のレジリエンスと災害に関するプラットフォームの取り組みについて紹介がなされました。また、防災科学技術研究所やアジア防災センターからも活動に関する発表がなされました。日印双方の発表を受けて討論が行われ、その中では、データの共有とその活用に関する情報プラットフォームを設立することの重要性が強調されました。また防災の観点から予報、分析、そして実践のための能力向上も重要であるとされました。午後のセッションでは日本から名古屋と熊本、インドからチェンナイとグルグラムといった都市の代表者による発表が行

(1) Third Indo-Japan Workshop on Disaster Risk Reduction

On March 18, 2019, the 3rd Indo-Japan Workshop on Disaster Risk Reduction was held at Vigyan Bhawan in New Delhi, India, and Director Toshio Koike and Chief Researcher Tetsuya Ikeda participated from ICHARM. The bilateral workshop was planned under a memorandum of cooperation (MoC) on disaster risk reduction (DRR), signed between the Ministry of Home Affairs of India and the Cabinet Office of Japan in September 2017, when Prime Minister of Japan Shinzo Abe visited India. This workshop on DRR had already been organized twice in March 2018 in New Delhi and in October 2018 in Tokyo. The third workshop was held in India's capital again, focusing on three themes: collaboration between research institutes, collaboration between cities, and collaboration in the private sector. The workshop started with a welcome address by Mr. Kishore, a member of the National Disaster Management Authority of India. Mr. Akihiro Nakamura, the Vice Minister for Policy Coordination of the Cabinet Office, also spoke on behalf of the delegation of Japan. Dr. P. K. Mishra, the Additional Principal Secretary for the Prime Minister of India, followed them, delivering a keynote address.

During the parallel session of the morning on "collaboration between research institutes," Koike gave a presentation, explaining ICHARM's activities and efforts for the Platform on Water Resilience and Disasters under the International Flood Initiative. The representatives from the National Research Institute for Earth Science and Disaster Resilience (NIED) and the Asia Disaster Reduction Center (ADRC) also presented their activities. After the presentations from both sides, the participants joined discussions in which the importance of establishing an information platform for data sharing and utilizing was emphasized. The importance of capacity development was also highlighted for prediction, analysis and operation in terms of disaster risk reduction. In the afternoon session, more presentations were made by the representatives of different cities: Nagoya and Kumamoto of Japan and Chennai and Gurugram of India.

In the closing session, the summaries of the parallel sessions were reported. Ms. Mami Mizutori, the Assistant Secretary General and Special Representative of the Secretary General for Disaster Risk Reduction, UNISDR, provided a special comment emphasizing the significance of mutual cooperation between Japan and India and the importance of integrating risk information into decision making processes, and outlined the Global Platform 2019 to be held this coming May in Geneva.

(2) Field trip and meetings at Kerala State

After participating in the workshop, the ICHARM researchers visited Kerala State. The state suffered severe damage from the unprecedented flood disaster in August 2018, which affected over a million people including nearly 500 deaths. On March 19, they took a field trip along the Chalakkudhi River, whose basin was one of the most damaged areas due to the flood disaster. They also visited Poringalkuthu Dam, where floodwater overtopped the dam and severely eroded the left bank immediately downstream. To cope with future damage equivalent to that caused by the unexperienced flood disaster, Kerala State is investigating the possibility of enlarging the dam's capacity of floodwater discharge.

Based on the findings from the field trip, meetings were held with engineers and high-level officials of the Government of Kerala, including Dr. Venu V, the chief Executive Officer of the Rebuild Kerala Initiative and Dr. Vishwas Mehta, the Additional Chief Secretary of the Water Resources & Housing Department. The meetings with local experts were very revealing. For example, heavy rainfall in August 2018 was record-breaking: the 1-, 2-, and 3-day extreme rainfall during August 2018 had a return period of 75, 200, and 100 years, respectively. The Kerala state government is considering the implementation of reconstruction projects, based on the "Rebuild Kerala Development Program," which was newly developed after the recommendations from the Post-Disaster Need Assessment conducted by UN agencies and the World Bank.

In the meetings, strong expectations were expressed for support and cooperation from ICHARM and Japan in terms of knowledge and expertise on hydro-meteorological modelling and advanced science and technology to achieve effective flood management, dam revitalization, and enhancement of social resilience for future flood disasters, which are expected to be more intense under climate change. In collaboration with relevant organizations of Japan, ICHARM will consider the possibility to initiate research cooperation for the development of effective flood management in Kerala State.



Opening of the 3rd Indo-Japan Workshop
on Disaster Risk Reduction
第3回日印防災協力会議での開会式



Representing participants of Japan and India
日印双方の代表参加者



Poringalkuthu Dam and its downstream erosion of the
left bank
Poringalkuthu ダムとその直下左岸側の侵食被害



Meeting with Dr. Vishwas Mehta (Third from left)
Dr. Vishwas Mehta (左から3人目) との会談

われました。

閉会式ではパラレルセッションの報告が行われました。また国連事務総長特別代表（防災担当）兼国連国際防災戦略事務局ヘッドの水鳥真美氏からの特別コメントでは、日印間の協力の意義とリスク情報を意思決定過程に統合することの重要性が強調されるとともに、今年5月にジュネーブで開催されるグローバルプラットフォーム2019の紹介がなされました。

(2) Kerala 州への現地調査と会合

日印防災協力会議に参加した後、小池センター長と池田上席研究員は Kerala 州で現地調査を行いました。この Kerala 州では昨年8月の甚大な洪水被害によって500名近くが亡くなり、被災者は100万人に及びました。3月19日には最も被害が大きかった河川の一つである Chalakkudhi 川流域を調査し、Poringalkuthu ダムを訪問しました。本ダムでは本体越流（オーバートップピング）が生じ、下流直下左岸側で大きな侵食被害が生じています。こうしたこれまで経験のない洪水被害に鑑み、現在、Kerala 州では洪水放流能力の増強を検討しています。

現地調査での成果を踏まえ、Kerala 州政府の技術者や Rebuild Kerala Initiative の代表者（CEO）である Dr. Venu V、および首席次官補（水資源・住宅部局）である Dr. Vishwas Mehta といった政府高官との会合を行いました。それによると2018年8月の降雨が記録的なもので、再現確率にして1日雨量で75年、2日雨量で200年、3日雨量で100年でした。Kerala 州政府では国連機関や世界銀行によって行われた災害後復興ニーズ評価調査（PDNA）からの提言を受け、新たに Kerala 再生開発プログラムを策定し、それによる復興事業を検討しているとのことでした。

同州では気候変動によってさらに甚大な洪水被害の発生が懸念されていることから、効果的な洪水管理、ダムの再生、社会的強靱性の向上を図るべく、気象水文モデルに関する知識・知見、最先端の科学技術に関して、ICHARM や日本からの支援・協力に対して強い期待が寄せられています。ICHARM では関係機関との連携を図りつつ、Kerala 州での効果的な洪水管理に向けての研究協力が進められるよう検討を行うこととしています。

(Written by Tetsuya Ikeda)

Field Survey

The 3rd field survey in the Sittaung River of Myanmar to investigate riverbanks and coastal erosion / 第3回ミャンマー国シッタウン川現地調査

ミャンマー国シッタウン川河口域では、河川流と潮汐流の影響を受けて侵食と堆積が活発に生じ、激しい流路変動が起っています。特に、河岸侵食による農地や宅地の消失が現地の人々に与える影響は大きく、シッタウン川の挙動の理解と対策の推進はミャンマー政府の重要な課題となっています。このような背景のもと、ICHARMでは2017年よりミャンマー運輸省水資源・河川系開発局(DWIR)と協力しながら、シッタウン川の調査研究を進めてきました。この研究の一環として、江頭進治研究・研修指導監、萬矢敦啓主任研究員、Badri Shrestha主任研究員、小関博司研究員(土木研究所 水工研究グループ)、原田大輔専門研究員、南雲直子専門研究員が参加し、2019年2月21～24日に現地調査を行いました。

今回の調査では、2017年10月、2018年2月に行った現地調査の結果や、日本で進めてきた土砂輸送シミュレーションの結果を考慮しながら、図1が示すようにボートを用いてシッタウン川の河川水と、河床・河岸材料の採取、ドップラー式流速計(ADCP)や濁度計を用いた流況、及び河川の断面形状等の調査を行いました。採取した試料及びデータは分析を進めているところで、これまでのデータと合わせることでシッタウン川の土砂輸送や河岸侵食の実態解明、及び土砂輸送シミュレーションの精度向上に役立ちます。

また、図2が示すように、調査日には河岸侵食の大きな要因の一つである海嘯(ボア)が発生していました。そのため、ドローンを用いて波の遡上の状況や、河岸侵食の様子を観察しました。その結果、これまで顕著であった河口域右岸の侵食が収まりつつあることが分かりました。これは、事前に行った衛星写真の判読結果や、河岸部の集落で実施した住民への聞き取り調査結果とも整合します。以上と合わせて、河口域右岸の地形発達理解にむけた予察的な表層地質調査や、集落の成り立ち、家屋移転に関する聞き取り調査も行いました。これにより、シッタウン川の流路変動に伴う土地の成り立ちや、集落の消長といった人々の住み方に関する検討が進むことが期待されます。

現地調査に先立つ2月20日には、図3に示すように水資源・河川系開発局のヤンゴン事務所にて研究打ち合わせも行いました。ここでは、ICHARMから2017年10月、2018年2月の現地調査から得られた成果について共有するとともに、土砂輸送のシミュレーション結果、今後の研究計画について報告しました。担当者らとは、今後も協力を継続しな

As a result of active erosion and deposition owing to river flow and tidal motion, dynamic channel shifts have been occurring in the mouth of the Sittaung River in Myanmar. Loss of land for agriculture and settlements due to bank erosion has made a significant impact on the livelihood of local people. Therefore, understanding the behavior of the Sittaung River and implementing prevention measures are critically important tasks for the government of Myanmar. Thus, ICHARM has conducted research activities in the lower Sittaung River since 2017, assisted by the Directorate of Water Resources and Improvement of River Systems (DWIR) of Myanmar. As part of this research, ICHARM decided to conduct a field survey on February 21-24, 2019, and sent a team of five researchers: Research and Training Advisor Shinji Egashira, Senior Researchers Atsuhiko Yorozyua and Badri Shrestha, Research Specialists Daisuke Harada and Naoko Nagumo. Researcher Hiroshi Koseki also joined this survey from the Public Works Research Institute of Japan.

During the field survey, the team used a boat and collected river water and sediment from the river bed and riverbanks. They also measured the turbidity, flow velocity, flow discharge, and cross-sectional shape of the Sittaung River using turbidimeters and an Acoustic Doppler Current Profiler (ADCP) (Fig. 1). The observation was conducted while considering the past field survey results collected in October 2017 and February 2018 and the computed results of sediment transport. The collected samples and measured data will be analyzed and compared with the previous results, which will help characterize the sediment transport and bank erosion processes of the Sittaung River better and improve the accuracy of sediment transport simulation.



Fig. 1 Sample collection and measurement using a boat
図1 ボートを用いた試料採取と測量

During the survey, a tidal bore occurred in the Sittaung River (Fig. 2). Since tidal bores are one of the main causes of bank erosion in the lower Sittaung River, the team used a drone (Mavic Pro, DJI) and observed tidal waves going upstream and eroding the riverbanks. The observation revealed that the right-bank erosion in the lower Sittanung River, which has been active until recently, is slowing down, which is consistent with the results of the satellite image interpretation made ahead of

the survey and those of the interview survey with residents of the settlements on the right bank. During the field survey, the team also conducted a preliminary investigation of the surface geology to understand the formation process of fluvial lowland developed in the right bank, and interviewed local residents regarding the establishment and relocation of villages. The results of all these investigations are expected to contribute to progress in the analysis of topographic development owing to the river channel shifts and the formation and destruction of villages.



Fig. 2 Observed tidal bore
図2 観察された海嘯（ポア）

が ICHARM と DWIR でシッタ
ン川に関する調査・研究を進めてい
くことで合意しました。

Prior to the field survey, the team visited DWIR Yangon Office for a research meeting (Fig.3). The ICHARM members shared the provisional results from the surveys in October 2017 and February 2018 with DWIR officers, and reported the results of sediment transport simulation and explained a future research plan. DWIR officers and the team members agreed that surveys and research activities in the Sittaung River would be continued in close collaboration between DWIR and ICHARM.



Fig. 3 Group photo at DWIR
図3 水資源・河川系開発局での集合写真

(Written by Naoko Nagumo)

Field surveys in the lower Stung Sen and Stung Staung Rivers in Cambodia / カンボジア・セン川及びスタウン川下流域における現地調査

As part of a JSPS* research project entitled "Local characteristics of sediment transport and landform development processes along the coast of Lake Tonle Sap," ICHARM Research Specialist Naoko Nagumo and Research and Training Advisor Shinji Egashira conducted field surveys in the Stung Sen and Stung Staung rivers of Cambodia on March 5-9, 2019. The surveys were a joint effort with Prof. Sumiko Kubo of Waseda University of Japan and Deputy Director Ben Bunnarin of the Department of Geology of the Ministry of Mines and Energy of Cambodia.

JSPS: Japan Society for the Promotion of Science

The survey sites are in central Cambodia, where there are rainy and dry seasons in central Cambodia where investigated sites are located, therefore water level and discharge of rivers fluctuate cyclically because of the rainy and dry seasons. Lake Tonle Sap, located in the mouths of the Stung Sen and Stung Staung rivers, expands its area in the rainy season to store flood water, which is assumed to affect the sediment transport and topographic development of these inflowing

科学研究費助成事業「トンレサップ湖岸域の土砂輸送と地形発達プロセスの地域特性」の一環として、2019年3月5日から9日にカンボジアのセン川およびスタウン川にて、河川の土砂輸送と地形発達に関する現地調査を行いました。この調査には、南雲直子専門研究員に加え、江頭進治研究・研修指導監、久保純子教授（早稲田大学）、及び、カンボジア鉱山エネルギー省地質調査所の Ben Bunnarin 副所長が参加しました。

対象地域のあるカンボジア中央部では雨季・乾季があるために、河川の水位や流量は周期的に変化します。また、セン川とスタウン川が流入するトンレサップ湖は洪水を貯留するために雨季には拡大することが

知られており、これらの河川の土砂輸送や地形形成には湖の変化が強く影響していると考えられます。今回の調査では、このような地理的環境において、セン川とスタウン川がどのように土砂を輸送しているのか調査するため、河床材料の採取と地形測量、ドローンによる地形観察を行いました。図1はセン川での土砂採取の様子を示したもので、乾季のために水位が低下し、砂州が形成されていることがわかります。一方、図2はスタウン川の様子を示したもので、流水はほとんどなく、砂からなる河床が露出する様子が見られました。また、住民が水を得るために河床に水路を掘削している様子も観察されました。

今後、採取した試料やデータの分析を進め、トンレサップ湖の拡大・縮小による支流の土砂輸送プロセスの変化や地形発達に関して、研究を行っていく予定です。

river. In the field surveys, which aimed to investigate how the two rivers transport sediment in such a geographic environment, the research team collected the river bed materials, measured the river bed topography, and observed the surrounding topography using a drone. Fig. 1 shows the river bed with well-developed dunes, which are exposed due to a low water level in the Stung Sen River. Fig. 2 shows the river bed of the Stung Staung River composed of sand with a minimal volume of river water. The team also found small channels in the river bed, which had been dug by local people to obtain water.

Nagumo and Egashira will analyze the collected data and samples, as well as continue additional research activities, to understand changes in the sediment transport processes and topographic development of the Tonle Sap tributaries owing to the expansion and contraction of the lake.

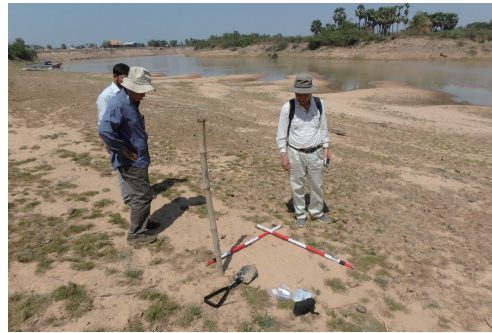


Fig. 1 Investigation of river bed materials in the Stung Sen River
図1 セン川における河床材料調査



Fig.2 River bed of the Stung Staung River
図2 スタウン川の河床

(Written by Naoko Nagumo)

Others

Annual hanami lunch / お花見ランチ

土木研究所幹部と ICHARM で勉学する 博士・修士コース学生・インターン生 (計 15 名: 外国人学生のみ) との交流を目的とした花見会を 2019 年 3 月 28 日のお昼休みに行いました。

桜は 3 分咲きでしたが、土木研究所西川和廣理事長、他の幹部の方々にも参加していただきました。お天気はあいにく途中で小雨が降りましたが、お弁当を食べながらの談笑、修士学生による楽器演奏と合唱に続き、参加者全員での合唱、学生代表による謝辞等が行われ、楽しい時間を過ごすことが出来ました。

外国からの参加者も日本の伝統であるお花見を体験できたことと思います。

On March 28, 2019, an ohanami, or cherry blossom viewing, luncheon was held under big sakura trees on PWRI premises. ICHARM holds this seasonal mini-outing for people at PWRI to mingle with foreign students in our educational program.

The event took place with a good crowd of researchers, assistants and students including Mr. Kazuhiro Nishikawa, the president of PWRI, and other executives.

Though it was cloudy and a little bit chilly, everyone enjoyed the traditional spring event, eating "bento" lunch, talking with friends and colleagues, listening to music with musical instruments played by students, and singing songs all together. The ohanami event ended with a speech by a student who thanked the staff for a wonderful time and experience.





(Written by Mikiko Nakamura)

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

ICHARM ではこの春、神戸大学からのインターン生、Soe Soe Tun 氏と大阪工業大学大学院からのインターン生、Tosho Sen 氏を受け入れました。

彼女らからの、ICHARM での研究活動を振り返ったコメントを紹介いたします。

ICHARM accepted internship students Ms. Soe Soe Tun from Kobe University and Mr. Tosho Sen from Osaka Institute of Technology this spring.

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

Ms. Soe Soe Tun

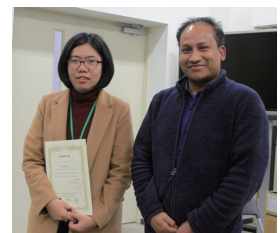
(from Myanmar)

Kobe University

Stay period: March 4 - 29, 2019

My name is Soe Soe Tun and I am a Master student, studying Disaster Risk Management at the Graduate School of International Cooperation Studying of Kobe University. I came and studied at ICHARM for one month as an intern student at the time of spring vacation. During my internship, I was able to learn Rainfall Runoff Inundation model under the supervision of Dr. Badri Bhakta Shrestha. My research interest is the impact of flood on Mandalay City in accordance with land use changing which is the second largest city in Myanmar with quick urbanization rate in the recent years. Under the guidance of Dr. Shrestha, I learned step by step setting of RRI model by using necessary inputs and the flood inundation simulation is done by changing various parameters. Based on the knowledge gained from my study at ICHARM, I am considering to approach my research, flood inundation pattern at Mandalay City, by combining RRI model and land cover changes information of the city from GIS. I expect to come out some results from my research which would be helpful in the decision-making process of city urban planning.

One-month study at ICHARM is the great opportunity for international student like me where I could see the working place of Japanese community as well as advanced disaster management technology. Therefore, I would like to say special thanks to all the responsible person of ICHARM for allowing me to study here and all the support during my stay.



Ms. Soe Soe Tun (left) with supervisor, Senior Researcher Badri Bhakta Shrestha

Mr. Toshio Sen (銭 東升)

(from China)

Osaka Institute of Technology

Stay period: March 11 - 15, 2019

今回、土木研究所 ICHARM で一週間の研修を受けました。私にとっては、IFAS と RRI の二つのモデルについて勉強する非常に良いチャンスを与えていただきました。ご指導いただいた、望月様、伊藤様、中村様、菊森様はじめ ICHARM のスタッフの皆様に感謝いたします。大変にありがとうございました。

一週間の研修の間に、2種類のモデルについて勉強をしました。まず、現在使用している IFAS の分布型流出モデルについて、改めてパラメータのチューニングの方法を習得しました。次に、降水流出氾濫モデルである RRI モデルの説明を受け、操作の流れを教えてくださいました。特に、RRI モデルについては、比較的小さい河川流域に対して IFAS モデルを使った際に難しかった河道の修正や苦労したピーク流量の補正が簡単に解決できました。市街地を含む流域や小さい流域に適用できる非常に便利なモデルと思いました。今後、流域に応じて IFAS モデルと RRI モデルをうまく使い分けて活用できるようになり、頑張って研究を進めていきたいと思っております。

I attended the internship program at ICHARM from 3/11 to 3/15. It was a very good opportunity for me to study how to operate two hydrological models, IFAS and RRI. I would like to thank all the staff members at ICHARM, especially Mr. Mochizuki, Mr. Ito, Mr. Nakamura, and Mr. Kikumori, for all their support.

During my one-week internship, I studied how to use the two models. First, I learned how to calibrate the parameters for IFAS's distributed runoff model, which I have been using for my research. Then, I was given an explanation of the RRI model, a rainfall-runoff-inundation model, and learned its operation procedures. I found RRI very useful. Before learning about RRI, I had had trouble correcting river channels and peak discharges when I applied IFAS to relatively small river basins. With RRI, however, it is very easy to make such corrections. The model will be extremely useful to conduct simulations for small basins and basins with an urban area. I will continue studying IFAS and RRI to become able to use them properly according to the type of a basin and make further progress in my research.



Mr. Toshio Sen

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

New ICHARM Members

Five new members joined ICHARM.
They would like to say brief hello to the readers around the world.



Kazuhiko Fukami / 深見 和彦

Director for Special Research / 特別研究監

Japan

I am happy to work for ICHARM again after my 6-year service at the Japanese Ministry of Land, Infrastructure, Transport and Tourism (MLIT). I will be in charge of managing capacity-building activities including Doctor & Master courses with Prof. Egashira & ICHARM members. I would like to contribute to building safe and comfortable world in terms of water through our ICHARM activities.



Masakazu Fujikane / 藤兼 雅和

Chief Researcher / 首席研究員

Japan

I've returned to PWRI for the first time in 25 years. It was very shocked for me that the flood of the Takahashi River in last summer caused serious damage. So, with everyone's help, I would like to promote the study for realizing the society of "letting nobody fail to evacuate from water related disasters".



Masatoshi Denda / 傳田 正利

Senior Researcher / 主任研究員

Japan

I am very happy to work in ICHARM. I had studied structures of river ecosystem and ecological modeling in PWRI. My research interests are river basin planning method harmonizing among disasters managements, sustainable development of human societies, and ecosystem management. I would like to contribute in various fields of ICHARM.


Yoshimasa Morooka / 諸岡 良優

Researcher / 研究員

Japan

I'm very happy to be a member of ICHARM from this April. Before coming here, I was a Ph.D. student of Chuo University. I would like to study solutions to the current water-related issues all over the world with passion and I am very excited to take on a new challenge.


Junko Miyamoto / 宮本 淳子

Chief Staff / 主査

Japan

This is my second time to work at ICHARM. I'm very happy to work with everybody again. I went to Sri Lanka last December and met some ICHARM Alumni. I may have a strong tie with ICHARM. Yoroshiku Onegaishimasu.

Leaving ICHARM

- Yoshiyuki Imamura : Director for Special Research

Director for Engineering Policy Analysis
 Planning and Research Administration Department
 National Institute for Land and Infrastructure Management (NILIM)
 Ministry of Land, Infrastructure, Transport and Tourism (MLIT)

- Yoshio Tokunaga : Chief Researcher

Director, Water and Environment Research Department
 Infrastructure Development Institute

- Young-Joo Kwak : Research Specialist

Researcher (Engineering Official)
 Information Platform Division
 Research Center for Infrastructure Management
 National Institute for Land and Infrastructure Management

- Yoshihiro Shibuo : Research Specialist

Project Associate Professor
 Department of Urban Engineering, School of Engineering
 The University of Tokyo

- Shinji Nakajo : Chief Staff

General Affairs Department
 National Institute for Land and Infrastructure Management

○今村 能之 特別研究監

国土交通省 大臣官房技術調査課
 建設技術政策分析官
 (併) 国土技術政策総合研究所 企画部

○徳永 良雄 上席研究員

大臣官房付
 (一社) 国際建設技術協会
 国際建設技術研究所研究第二部長

○郭 栄珠 専門研究員

国土交通省 国土技術政策総合研究所
 社会資本マネジメント研究センター
 社会資本情報基盤研究室
 研究官 (研究技官)

○洪尾 欣弘 専門研究員

東京大学大学院工学系研究科都市工学専攻
 特任准教授

○中條 伸二 主査

国土交通省国土技術政策総合研究所
 総務課総務係長 (併) 管理係長

Business trips / 海外出張リスト

* January - March 2019

- January 10 – 12, Singapore, Tetsuya Ikeda, The 23st Governing Council Meeting of the Asia-Pacific Water Forum (APWF)
- January 16 – 19, Beijing in China, Toshio Koike, to attend "Chinese Academy of Science Award for International Scientific Cooperation"
- January 20 – 26, Nepal, Yoshiyuki Imamura, Shinji Egashira, Hitoshi Umino, Badri Bhakta Shrestha and Satsuki Yanagihara, to hold the 11th Follow-up Seminar and sight visit and activities of recruitment of ICHARM training course
- January 21 – 24, Malaysia, Tetsuya Ikeda, Meeting with Department of Irrigation and Drainage (DID) regarding Annual Operating Plans (AOPs) of Typhoon Committee WGH
- January 22 – 29, Goyang, Busan and Ulsan in Korea, Young-Joo KWAK, 1) To make a speech at the seminar invited by Korea Institute of Civil Engineering and Building Technology (KICT) 2) To attend "Drone Show Korea 2019" and make a speech 3) Meeting with Korea National Disaster Management Research Institute (NDMI)
- January 22- 26, Bangkok in Thailand, Hisaya Sawano, to attend THA2019 International Conference on Water Management and Climate Change towards Asia's Water-Energy-Food Nexus and SDGs
- January 26 -31, Indonesia, Yoshiyuki Imamura and Satsuki Yanagihara, activities of recruitment of ICHARM training course
- January 27- 31, Jakarta in Indonesia, Hisaya Sawano and Yosuke Tomizawa, Meeting on the platform for IFI in Indonesia
- February 2 – 7, Myanmar, Hisaya Sawano, Yoshiyuki Imamura, Hirotsato Yoshino and Satsuki Yanagihara, 1) DIAS training 2) To attend DMCD Workshop (Disaster Management Collaboration Dialogue between Myanmar and Japan) 3) Meetings with high officials of major related organization, Embassy of Japan and JICA in Myanmar
- February 5 – 10, the Philippines, Toshio Koike, Hisaya Sawano, Yoshio Tokunaga, Tetsuya Ikeda, Miho Ohara, Mamoru Miyamoto, Tomoki Ushiyama, Naoko Nagumo and Izumi Nishi, 1) IFI meeting 2) Meeting with Typhoon Committee Working Group of Hydrology 3) Research meeting with University of Philippines Los Baños and Calumpit municipality.
- February 7 - 9, Hisaya Sawano, Calumpit in Philippine, Research meeting with Calumpit municipality
- February 10 - 16, Switzerland, Toshio Koike and Mamoru Miyamoto, the Technical Conference on Future Hydrological Priorities and Arrangement and the Extraordinary Session of the Commission for Hydrology (CHy), WMO
- February 17 - 21, Sri Lanka, Toshio Koike, Tetsuya Ikeda, Mohamed Rasmy Abdul Wahid, Mamoru Miyamoto, Tomoki Ushiyama, and Selvarajah Hemakanth, The 3rd Plenary Session for the Platform on Water Resilience and Disaster
- February 19 - 27, Myanmar, Shinji Egashira, Badri Bhakta Shrestha, Naoko Nagumo, Daisuke Harada, Atsuhiko Yorozya, and Hiroshi Koseki, Field Survey at the Sittaung River in Myanmar

- February 20 – 27, Busan, Seoul and Ulsan in Korea, Young-Joo Kwak, 1) To make a speech at the seminar invited by National Disaster Management Research Institute (NDMI) 2) Meeting with Seoul University
- February 22 - March 2, China, Yoshio Tokunaga, 1) To participate in the 3rd Chunhua conference in Fuzhou, 2) To participate in the 51st Session of Typhoon Committee
- February 25 - March 2, China, Tetsuya Ikeda and Yosuke Tomizawa, to participate in the 51st Session of Typhoon Committee
- March 2 - 13, Montana and Colorado, America, Young-Joo Kwak, 1) To attend 2019 IEEE International Geoscience and Remote Sensing Symposium 2) To have a meeting with DFO (Dartmouth Flood Observatory) in Colorado Univ.
- March 3 - 10, Cambodia, Shinji Egashira and Naoko Nagumo, Field survey on sediment transport in the lake Tonle Sap coast and research meeting
- March 4 – 8, Bangkok, Thailand, Mamoru Miyamoto, to participate as a lecturer in the flood forecasting workshop at the Royal Irrigation Department of Thailand
- March 4 - 9, Bolivia, Yoshihiro Shibuo, to give a keynote speech at International Symposium on Environment Science for Regional Sustainability
- March 11 - 15, Jakarta, Indonesia, Yosuke Tomizawa, Meeting on the platform for IFI in Indonesia
- March 14 - 21, Bangladesh, Young-Joo Kwak, 1) To install "low-cost automatic water level sensing" with BWDB 2) To have a meeting with Bangladesh University of Engineering and Technology (BUET)
- March 17 - 21, India, Toshio Koike and Tetsuya Ikeda, to participate in the 3rd Japan-India Workshop on Disaster Risk Reduction and field survey in Kerala State
- March 17 - 23, Thimphu, Bhutan, Yoshiyuki Imamura, Yoshio Tokunaga and Satsuki Yanagihara, to visit and hold meetings with several ministries (Royal Civil Service Commission, National Center for Hydrology and Meteorology, Ministry of Works and Human Settlement, Ministry of Agriculture and Forests, Ministry of Home and Cultural Affairs, and their departments) for the recruitment of master's and Ph.D. courses students
- March 18 - 23, Myanmar, Mohamed Rasmy Abdul Wahid, Takafumi Mochizuki, Katsunori Tamakawa, Installation of ground based real-time rainfall observation and data transfer system in Sittang river basin, Myanmar
- March 26 - 30, Thailand, Mamoru Miyamoto and Yosuke Nakamura, Site Visit regarding SATREPS at Rojana Industrial Park in Thailand
- March 23 - 31, Brazil, Toshio Koike, 1) Join a session on IAP-SPEC Conference at Rio de Janeiro 2) Join workshop of World bank Brazil drought project
- March 23 - 29, Brazil, Hiroyuki Tsutsui, Join workshop of World bank Brazil drought project

Publications / 発表論文リスト

* January - March 2019

1. Journal, etc / 学術雑誌 (論文誌、ジャーナル)

- 原田大輔、江頭進治、流砂機構に着目した流砂の縦断分級現象の評価法、水工学論文集、Vol.63、pp.1_907-1_912、2018年11月
- 南雲直子、雨季・乾季の環境変動を伴う東南アジアの河川研究、第四紀研究、Vol.58、No.1、pp.13-27、2019年1月
- 瀬口貴文、岩崎杉紀、鴨川仁、牛山朋来、岡本創、Observation of Jumping Cirrus with Ground-Based Cameras, Radiosonde, and Himawari-8、Journal of the Meteorological Society of Japan、早期公開、2019年1月

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

- 南雲直子、江頭進治、シッタ川河口域の流路変化に関する地理学的検討、日本地理学会発表要旨集、Vol.95、pp.118、2019年日本地理学会春季学術大会、日本地理学会、専修大学、2019年3月
- 船引彩子、久保純子、南雲直子、山形真理子、Kien Nguyen、メコンデルタ、オケオ遺跡における古代運河の形成、日本地理学会発表要旨集、Vol.95、pp.117、2019年日本地理学会春季学術大会、日本地理学会、専修大学、2019年3月
- 南雲直子、ハザードマップをどう扱うか、日本地理学会発表要旨集、Vol.95、pp.10、2019年日本地理学会春季学術大会、日本地理学会、専修大学、2019年3月
- Gusyev M.A. (2019). Modelling of groundwater and surface water residence times using tritium as a tracer. The International Atomic Energy Agency (IAEA)/ Regional Cooperative Agreement (RCA) Regional Training Course (RTC) RAS7030 Project "Isotopic Data Processing and Interpretation – Hands on Exercises", Tsukuba University, Tsukuba, March 18th, Japan.

3. Poster Presentation / ポスター発表

None / 該当者無し

4. Magazine, Article / 雑誌、記事 (土技資含む)

- 澤野久弥、水防災に関する科学・技術分野間の学際研究と社会との協働、土木技術資料、一般財団法人 土木研究センター、第61巻、pp.10-13、平成31年1月号、2019年1月
- 大原美保、徳永良雄、小林亘、地下街等関係事業所の避難確保・浸水防止体制の強化に向けた情報配信アプリの活用、土木技術資料、一般財団法人 土木研究センター、pp.8-11、平成31年3月号、2019年3月
- 南雲直子、沖積平野を対象とした地形分類と洪水氾濫解析、地理、pp.66-73、Vol.64、2019年4月号

5. PWRI Publication / 土研刊行物 (土研資料等)

None / 該当者無し

6. Others/ その他

None / 該当者無し

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