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United Nations  
Educational, Scientific and  
Cultural Organization

## Message from Director

The eruption of Mt. Eyjafjallajökull of Iceland in mid-April was a major disaster fatally disrupting European air traffic and affecting several millions of people. Among the affected were the members of the 3rd IRDR Scientific Committee held in Paris on 14-16 April. I was lucky to be able to move to Delft by train on the 18th and after seeing many friends at UNESCO-IHE, I could fly back to Japan on the 20th from the Amsterdam Airport via Dubai. It was a real disaster experience for all the IRDR Science Committee members. During the committee meeting, the members congratulated Dr. Jane E. Rovins for her appointment to the executive coordinator of IRDR International Project Office at the Center for Earth Observation and Digital Earth, Chinese Academy of Sciences, Beijing. We at ICHARM, too, are looking forward to working with her.

On 24-26 May, a delegate from HidroEX visited ICHARM. HidroEX is a new UNESCO Category II Center established in Minas Gerais, Brazil. The delegate was headed by Congressman Narcio Rodrigues and accompanied by four others including the former Rector of UNESCO-IHE Richard Meganck. It was a great pleasure to receive such respectable visitors, and we are excited to start collaboration with a sister institute on the other side of the globe in the IFAS early warning system and education program.

The photos I selected for this issue is the 400 m high Nurek Dam, the world's highest dam in Tajikistan, which I visited on the occasion of the High-level International Conference on a mid-term comprehensive review of Implementation of International Decade for Action "Water for Life, 2005-2015" in Dushanbe, 8-10 June 2010. At the conference, Tajikistan's President Emomali Rahmon and Iran's President Mahmoud Ahmadinejad both spoke and called for collaboration on water security. The audience was greatly inspired with the enthusiasm that the two presidents expressed in their speeches.



On 5-9 July 2010, I also participated in the 19th IHP-IGC at UNESCO, Paris. The conference selected three new members from Russia, Cote de Voire and Jamaica for the ICHARM International Advisory Board. The board, now consisting of these three and the other ten, will meet in Tokyo and Tsukuba on 28-29 September. We thank their continued willingness to give us insightful advice on our activities and are looking forward to seeing them all in Japan.

Kuniyoshi Takeuchi  
Director of ICHARM

今年4月中旬、アイスランド・エイヤフィヤトラヨークトル火山が噴火、欧州では航空業務に大混乱が生じ、何百万もの人々に影響がありました。第3回 IRDR\* 科学委員会は4月14～16日にパリで開催されたため、私を含め参加者は一様に噴火の影響を受け、奇しくも災害を実体験することになりました。一方、会議では、Jane E. Rovins 博士が、北京・中国科学院の対地観測・数字地球科学中心 (CEODE) 内に設立された IRDR 国際プロジェクトオフィスの事務局長に就任された旨報告がありました。

5月24～26日には、ブラジルに新設された UNESCO カテゴリー2 センター HidroEX の代表団が ICHARM を訪問しました。訪問団には、Narcio Rodrigues 下院議員を団長に、前 UNESCO-IHE 学長の Richard Meganck 氏も同行されました。今後、IFAS 及び教育プログラムを中心に協力していくことになります。

6月8～10日には、タジキスタンで開催された「国連『命の水10年2005-2015』開発目標」の中間評価に関する会議に出席しました。写真は、その時に撮影した世界一の堤高(400m)を誇る Nurek ダムです。会議では、Rahmon タジキスタン大統領、Ahmadinejad イラン大統領両氏が水安全保障に関する各国の協力を訴え、感動を与えました。

また、第19回 UNESCO 政府間理事会在が7月5～9日にパリで開催されました。理事会では、ICHARM 諮問委員として、新たに3名がロシア、コートジボワール、ジャマイカから選出されました。新委員3名は、他の諮問委員10名とともに、9月28日(東京)、29日(つくば)で開催される諮問委員会に出席される予定です。諮問委員の方々から貴重なアドバイスが頂けることを期待しているところです。

\*IRDR : 災害リスク統合研究

# Special Topics & Events

## International Symposium “Floods – A global problem that needs local solutions” will be held (28 September 2010)

9月28日、国連大学（東京都渋谷区）において、ICHARM・国連大学共催で、国際シンポジウム「洪水～地域多様性を有する世界的問題～」を開催します。本シンポジウムでは、ICHARMや国際洪水イニシアチブ（IFI）の活動紹介、世界各国からの講演者による「地域からの報告」、国際防災関係機関のメンバーによるパネルディスカッション「Global cooperation to help local solutions」が行われます。ぜひご参加下さい。なお、ご参加には事前申込が必要です。

日時：2010年9月28日（火）  
10:00～17:00  
場所：国際連合大学  
3階 ウ・タントホール  
〒150-8925 東京都渋谷区神宮前 5-53-70

URL: <http://www.unu.edu/>  
※会場には駐車場がありませんので、ご来場の際は公共交通機関をご利用ください。  
言語：英語（通訳なし）

詳細は下記のサイトに随時掲載していきます。  
[http://www.icharm.pwri.go.jp/news/news\\_j/100928\\_icharm-unu\\_j.html](http://www.icharm.pwri.go.jp/news/news_j/100928_icharm-unu_j.html)  
また、前回のシンポジウムの様子は2008年11月号 Volume 3 No.3 (ISSUE No.10) に掲載されていますので、ぜひご覧下さい。

<お問合せ・お申込み先>  
独立行政法人土木研究所 水災害・リスクマネジメント国際センター (ICHARM)  
E-mail: [icharm@pwri.go.jp](mailto:icharm@pwri.go.jp)  
© 2010年9月17日（金）締切

An international symposium, "Floods – A global problem that needs local solutions", will be jointly held by ICHARM and the United Nations University (UNU) on 28 September 2010 at UNU in Shibuya Ward, Tokyo. The symposium will include the followings: the introduction of ICHARM activities, regional reports by speakers from several countries, and a panel discussion on “Global cooperation to help local solutions” by members of international disaster prevention organizations. Your participation will be greatly appreciated.

Visit ICHARM website for updates at: [http://www.icharm.pwri.go.jp/news/news\\_e/100928\\_icharm-unu\\_e.html](http://www.icharm.pwri.go.jp/news/news_e/100928_icharm-unu_e.html)

See Volume 3 No.3 ISSUE (No.10), November 2008 for the last symposium report.

- **Date & Time:** 10:00-17:00, Tuesday, 28 September 2010
- **Venue:** U Thant International Conference Hall, United Nations University (Tokyo)  
Jingumae 5-53-70, Shibuya-ku, Tokyo URL: <http://www.unu.edu/>  
\*No parking space available for visitors. Please use public transportation.
- **Language:** English

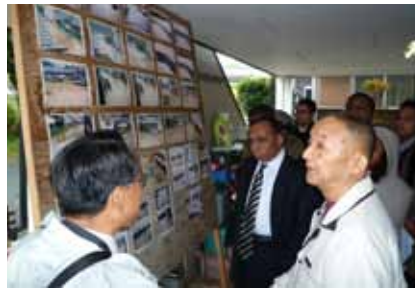
**Pre-registration required**      **Contact & Registration: ICHARM ▶ [icharm@pwri.go.jp](mailto:icharm@pwri.go.jp)**  
Closing date for registration is **17 September 2010**

Schedule (tentative)	
(9:30-10:00)	Registration
10:00-10:15	Opening remarks by organizers Chief Executive of PWRI Konrad Ostervalder      Rector of UNU
10:15-10:30	Congratulatory speeches by guests of honor MOFA MEXT MLIT
10:30-11:50	ICHARM and International Flood Initiative (IFI) activities Director and researchers of ICHARM Srikantha Herath      Senior Academic Programme Officer, UNU
(11:50-13:20)	Lunch)
13:20-14:50	Regional reports Eugene Stakhiv      US Co-Director, IJC Upper Lakes Study, & Technical Director, UNESCO-ICIWaRM Institute for Water Resources [U.S.A.] Zurab D. Kopaliani      Head, Laboratory for Computation and Forecasting River Channel Changes, State Hydrological Institute (SHI) [Russia] Basil Fernandez      Managing Director, Water Resources Authority [Jamaica] Keizrul bin Abdullah      Former Director General of the Department of Irrigation and Drainage [Malaysia] Biémi Jean      Dean, UFR STRM, University of Cocody [Republic of Cote d'Ivoire] Mohamed-Bahaa Eldin Ahmed Mohamed Saad      Emeritus Professor, Hydraulics Research Institute, National Water Research Center [Egypt]
(14:50-15:20)	Break)
15:20-16:50	Panel discussion “Global cooperation to help local solutions” András Szöllösi-Nagy      Rector, UNESCO-IHE Institute for Water Education Avinash C. Tyagi      Director, Climate and Water Department, World Meteorological Organisation (WMO) JICA Sálvano Briceño      Director, International Strategy for Disaster Reduction (UN/ISDR) Siegfried Demuth      Chief, Hydrological Processes and Climate Section, Division of Water Sciences, Natural Sciences Sector, UNESCO Moderator Katsuhito Miyake      Team Leader, ICHARM Moderator Srikantha Herath      Senior Academic Programme Officer, UNU
16:50-17:00	Wrap-up & closing remarks      Kuniyoshi Takeuchi      Director, ICHARM

*\*Names listed without honorific.*

## Mr. Ueda awarded for his distinguished contribution in river management (21 May 2010)

Mr. Takeo Ueda of Ise City, Mie Prefecture, was awarded the 2010 River Contribution Award by the Japan River Association (JRA) for his distinguished contribution in river management efforts. The awarding ceremony was held on 21 May 2010 in Tokyo. Mr. Ueda had been nominated for the award by the Public Works Research Institute (PWRI) for the recognition of his substantial cooperation for ICHARM training courses.



Mr. Ueda shares his experience with trainees showing photos. (17 November 2009)

PWRI offers a range of training programs including a Master's course for flood management personnel from developing countries. During training, trainees have an opportunity to visit Enza District of Ise City to attend a lecture by Mr. Ueda on the importance of "mutual support" and the community on which it relies. The number of trainees who listened to his lecture has reached as many as 100.

Recently, non-structural flood countermeasures such as early warning and evacuation systems have drawn more attention in developing countries. In this respect, Mr. Ueda is right to the point. In his lecture, he always emphasizes that the most important thing is to continue improving disaster preparedness as a community in normal times, referring to the flood management efforts in their community and his experience in the 2004 flood. His lecture is a very important part of the training and a valuable opportunity for trainees to learn the importance of "mutual support" and the community.

The award is a form of appreciation for his selfless dedication to sharing Japan's flood management practices with foreign trainees.

A summary of Mr. Ueda's lecture including lessons about disaster management has been published by ICHARM as "A Tale of Ise-Enza" (PWRI Technical Note Vol. 4165), which is available at: [http://www.icharm.pwri.go.jp/publication/technical\\_note.html](http://www.icharm.pwri.go.jp/publication/technical_note.html)

(For inquiry, contact the ICHARM International Technical Exchange Team : [icharm@pwri.go.jp](mailto:icharm@pwri.go.jp))

土木研究所が推薦した上田武夫氏（三重県伊勢市）が、（社）日本河川協会により「平成 22 年河川功労者」として表彰されました。

土木研究所は、途上国の洪水対策に携わる行政官に対する各種研修を実施しています。その一環として、防災における「共助」とその基礎であるコミュニティの重要性を学ぶために、伊勢市円座地区を訪問し、上田氏から講話をいただけてきました。これまでに受講した研修生数はのべ 100 名にのぼります。

上田氏は、円座地区でのコミュニティ活動と 2004 年の宮川洪水被害時の出来事のお話をされる際に、「住民レベルでの防災に対する平時からの不断の活動こそが最も重要」と毎回強調されています。上田氏の講話は、ソフト対策に不可欠な「共助」とコミュニティの重要性を学ぶための重要な機会となっています。

今回の表彰は、このような我が国の防災活動を外国に伝える貴重な役割を果たした上田氏の活動が評価されたものです。

なお、土木研究所資料第 4165 号『伊勢・円座ものがたり A Tale of Ise-Enza』に上田氏の講話の内容と、そこから得られる防災の教訓についてまとめています。

[http://www.icharm.pwri.go.jp/publication/technical\\_note\\_j.html](http://www.icharm.pwri.go.jp/publication/technical_note_j.html)

(問い合わせ先／ ICHARM 国際普及チーム : [icharm@pwri.go.jp](mailto:icharm@pwri.go.jp))

## Miyake awarded the 2009 JSCE Continuing International Contribution Award (28 May 2010)

Katsuhito Miyake, the team leader of ICHARM Disaster Prevention Research Team, was awarded the 2009 Continuing International Contribution Award by the Japan Society of Civil Engineers (JSCE) for his longtime contribution to global water issues.

Miyake started his career at the Ministry of Construction in 1985. His first international career experience was when he was assigned to a secretary post at the Embassy of Japan in Iran in 1991. After three years, he came back home and assumed several managing positions at different offices. After that, during 2001-2003, he worked as a professional officer at the World Meteorological Organization/Global Water Partnership Associated Programme on Flood Management. In 2004, he was selected as the chair of the Working Group on Hydrology of the ESCAP/WMO Typhoon Committee and served in the position for four years until 2008.

Miyake joined ICHARM in July 2007 as a chief researcher for special assignment and led the planning and coordination of issues in water-related disasters for the 1st Asia-Pacific Water Summit and the 5th World Water Forum. He is currently the team leader of the ICHARM Disaster Prevention Research Team.

(For inquiry, contact the ICHARM Disaster Prevention Research Team : [icharm@pwri.go.jp](mailto:icharm@pwri.go.jp))

三宅且仁上席研究員の長年の国際活動に対して、土木学会から「平成 21 年度国際活動奨励賞」が授与されました。

三宅上席研究員は、1985 年建設省（当時）入省後、1991 年には在イラン日本大使館書記官として勤務。2001 年から 3 年間世界気象機関（WMO）水文水資源部に出向。2004 年には台風委員会水文部会の議長に選任され、2008 年まで 4 年間議長を務めました。

2007 年 7 月から ICHARM 特命上席研究員となり、第 1 回アジア太平洋水サミット及び第 5 回世界水フォーラムの水災害関係トピックの企画調整に従事しました。現在は防災チーム上席研究員として、国際活動に携わっています。

(問い合わせ先／ ICHARM 防災チーム : [icharm@pwri.go.jp](mailto:icharm@pwri.go.jp))

## Brazilian delegation visits ICHARM (24-25 May 2010)

5月24日及び25日、ブラジル国ミナスジェライス州から HidroEX の関係者が ICHARM を訪問しました。HidroEX は同州に最近設立された UNESCO カテゴリー 2 センターです。一行は同州出身のブラジル国会議員であるデブタード・ナルシオ・ロドリゲス氏を団長とし、その他前ユネスコ国際水教育センター学長であるリチャード・メガンク氏をはじめ4名の著名な学識者で構成されていました。25日午前にはロドリゲス氏による「ブラジルの水問題」と題した講演が ICHARM 講堂で行われました。引き続き、HidroEX と ICHARM は、ブラジルと世界の直面する水問題、また両者の協力可能性について広く議論を行い、今後の協力体制に関する事前覚書に署名しました。これを契機に、今後人材育成分野などでの両機関の協力が始まることが期待されています。

(問い合わせ先／ ICHARM 国際普及チーム : [icharm@pwri.go.jp](mailto:icharm@pwri.go.jp))



The Brazilian visitors and ICHARM members smile together at the entrance of the ICHARM building.

A delegate from HidroEX visited ICHARM on 24 and 25 May 2010. HidroEX is a newly established UNESCO Category II Center located in the State of Minas Gerais in Brazil. The delegate was headed by Mr. Deputado Narcio Rodrigues, a Brazilian congressman from Minas Gerais State, and joined by four other high-level experts including Dr. Richard Meganck, a retired former rector of UNESCO-IHE. The HidroEX and ICHARM discussed at length on challenges in water-related disasters in Brazil and other areas in the world, and opportunities for future collaboration between the two parties. On the morning of 25 May, Mr. Rodrigues delivered a lecture on "Water-related Challenges in Brazil" at the ICHARM auditorium, followed by the signing of the preliminary MoU. It is hoped that the two institutions would jointly inaugurate a collaboration programme such as human capacity development in the near future.

(For inquiry, contact the ICHARM International Technical Exchange Team : [icharm@pwri.go.jp](mailto:icharm@pwri.go.jp))

## ICHARM signs MoU with TDMRC (21 June 2010)

6月21日、インドネシア・バンドアチエにあるシアクアラ大学津波・災害軽減研究センター (TDMRC) から、ICHARM・TDMRC 間覚書調印のため、センター長の Dirhamsyah 博士を含む4名が ICHARM を来訪されました。一行は、覚書調印の他、土木研究所理事長への表敬訪問、研究施設の見学を行い、さらに将来の研究協力に関する可能性を話しあいました。

TDMRC は、2004年のインド洋津波による壊滅的な被害を契機として、2006年に設立され、災害リスク軽減に対する住民意識を向上させるための戦略立案を目的として、応用研究に取り組むことを目的としています。ICHARM は TDMRC と 2008年以降協力関係を強化しており、2010年3月には、バンドアチエで、持続可能な津波災害管理に関する国際ワークショップを共催しました。今回調印した覚書に基づき、これから両センターは、さまざまな分野で協力体制を充実させていくこととなります。

なお、今回メンバーの一人として来訪した Teuku Alvisyahrin 博士は、2008年に ICHARM が実施した「UN/

The representative of the Tsunami and Disaster Mitigation Research Center (TDMRC) of Syiah Kuala University in Banda Aceh, Indonesia, visited ICHARM on 21 June 2010. The highlight of this visit was the signing of MoU between TDMRC and ICHARM. They also paid a courtesy visit to PWRI Chief Executive Sakamoto and took an observation tour to several research facilities of PWRI and had a discussion on potential future collaborative activities to ICHARM Director Takeuchi.

TDMRC was established in 2006 in response to the great devastation caused by the 2004 Indian Ocean Tsunami disaster. The main focus of TDMRC is to conduct applied studies in disaster risk reduction to produce strategic concepts to increase people's awareness of disaster risk reduction. The collaboration between ICHARM and TDMRC has been developed since 2008. In March 2010, they jointly organized the International Workshop on Sustainable Tsunami Disaster Management in Banda Aceh.

Besides, Dr. Teuku Alvisyahrin, one of the delegates, is an ex-trainee of the "UN/ISDR Comprehensive Tsunami Disaster Prevention Training Course", which was conducted by ICHARM in 2008. We are so delighted to continue the relationship with him and finally sign the MoU with his institution.

Based on the MoU, which was signed by ICHARM Director Takeuchi and TDMRC Director Dirhamsyah, the parties have agreed to cooperate in various forms such as conducting



ICHARM's Director (left) and TDMRC's Director (right) shake hands after signing the MoU.

collaborative research, co-organizing technical conferences, encouraging exchange visits and collaboration in job-trainings and internships, establishing links between the parties' websites, developing electronic communications, and jointly preparing technical and scientific reports in areas of mutual interest.

(For inquiry, contact the ICHARM Disaster Prevention Research Team : [icharm@pwri.go.jp](mailto:icharm@pwri.go.jp))

ISDR 総合津波防災研修」の研修生でもあります。研修終了後も関係を維持し、今回の覚書の締結に至ったことは大変喜ばしいことです。

(問い合わせ先 / ICHARM 防災チーム : [icharm@pwri.go.jp](mailto:icharm@pwri.go.jp))

## Capacity Development

### Accepting applications for Ph. D. Disaster Management Program 2011

The National Graduate Institute for Policy Studies (GRIPS) and ICHARM are jointly accepting applications for "Ph. D. Disaster Management Program 2011".

For more details, visit at: [http://www.icharm.pwri.go.jp/news/news\\_e/100730\\_phd\\_e.html](http://www.icharm.pwri.go.jp/news/news_e/100730_phd_e.html)

(For inquiry, contact the ICHARM International Technical Exchange Team : [icharm@pwri.go.jp](mailto:icharm@pwri.go.jp))

政策研究大学院大学 (GRIPS) と ICHARM は、博士課程防災学プログラムの 2011 年度学生の募集を開始しました。詳細は下記のサイトをご覧ください。

[http://www.icharm.pwri.go.jp/news/news\\_j/100730\\_phd\\_j.html](http://www.icharm.pwri.go.jp/news/news_j/100730_phd_j.html)

(問い合わせ先 / ICHARM 国際普及チーム : [icharm@pwri.go.jp](mailto:icharm@pwri.go.jp))

### Master's course update

ICHARM has been conducting a one-year master's program, "Water-related Disaster Management Course of Disaster Management Policy Program," since 2007 in collaboration with the Japan International Cooperation Agency (JICA) and GRIPS. Twelve students are enrolled in the class of 2009 and currently having discussions with ICHARM researchers everyday to complete their master's theses by the 23 August deadline. On 3 June and 16 July, interim presentations were held to see their progress.



Flood Fighting Drill



At Kitakami River

Over the past year, the students have been very busy dealing with their course work. In the first half, they learned mainly through lectures and exercises. In the second half, they visited many places for different types of flood countermeasures and

experienced on-sight exercises. In April, they visited the Hii River, the Oota River, the Yodo River and the Kamenose landslide area along the Yamato River. Also in April, they took part in a flood discharge measurement exercise in the Tone River using ADCP. In May, they visited the Kitakami River, the secondary levee construction site in Osaki City, the collaboration project between two dams in the Kinu River upstream area and sabo sites in the Nikko area. They also had a chance to participate in the 59th Tone River Flood Fighting Drill and experienced making emergency sand bags. In June, they visited the Kurobe River, the Shinano River, and countermeasures for natural dams in Nagaoka City. In July, they made a visit to the artificial precipitation facility in the National Research Institute for Earth Science and Disaster Prevention (NIED) and the Japan Aerospace Exploration Agency (JAXA).



Kamenose



Obara dam

ICHARM は、JICA や GRIPS と連携して、2009 年 10 月から 3 年目となる修士コース『防災政策プログラム水災害リスクマネジメントコース』を実施中です。12 名の学生は現在、毎日 ICHARM スタッフと議論を行いながら、8 月 23 日の修士論文締切りに向けて鋭意努力中です。

3 月までの前半は、室内での講義や演習が中心でしたが、4 月以降は、我が国の洪水対策についてより深く学習するため、多くの現地視察や現地演習を実施しました。4 月には、斐伊川・太田川・淀川各流域における河川整備事業と亀の瀬地すべり対策現場を視察しました。また、利根川 (渋川市) での流量観測現地演習も行いました。5 月には北上川流域における洪水対策事業や宮城県大崎市鹿島台地区の二線堤工事現場、鬼怒川上流でのダム連携事業や日光砂防事業などの視察を行うとともに、第 59 回利根川水防演習に参加し、我が国の大規模な演習に驚きながら土のう作りを体験しました。6 月には、黒部川・信濃川流域の洪水対策事業や、2004 年の中越地震で大きな被害を受けた長岡市山古志地区での天然ダム対策を視察しました。

(問い合わせ先 / ICHARM 国際普及チーム : [icharm@pwri.go.jp](mailto:icharm@pwri.go.jp))

(For inquiry, contact the ICHARM International Technical Exchange Team : [icharm@pwri.go.jp](mailto:icharm@pwri.go.jp))

# Research

## Introduction of "IFAS" (No.5) Result Display

前号までで、ICHARM で公開している総合洪水解析システム「IFAS」の衛星観測雨量データの補正手法、流出解析エンジン、GIS データを用いたモデル作成機能についてご紹介してきました。今号は、流出計算を行った後、様々な計算結果を表示する機能についてご紹介いたします。

### 1) IFAS での計算結果表示機能

IFAS 内の "Result Viewer" (図 1) では、標高や土地利用といった流域基本情報のほかに、流出計算を行った結果を表示することができます。代表的なのが、任意のグリッド位置(複数地点選択可)における雨量・流量時系列変化図(ハイドログラフ)です(図 2)。計算により求めた流量と、流量観測地点での実測流量とを重ね合わせる機能も備えています。

図 3 のように、選択したグリッド位置の表層タンクや地下水タンクの水位および流出量が表示されます。また、それらを時系列でアニメーション表示を行うことが可能であり、パラメータ調整をする際の参考になります。

前述の雨量や流量やタンク状況は、時系列データとして出力でき、Excel などの表計算ソフトにて簡単な解析が可能です。

河道グリッドにおける河道水位とユーザーが事前に作成した横断面を重ねて表示させることができます(図 4)。水位・流量曲線式の係数を設定し、流量に応じた水位を河道横断面に出力します。

### 2) 汎用地図ソフトウェアへの計算結果出力機能

雨量分布や流量などの計算結果を KML 形式のファイルとして出力し Google Earth 上でアニメーション表示することができます(図 5)。また、複数の KML ファイルを重ね合わせて表示することで、雨量や流量の変化をより視覚的に表現できます。

今号まで 5 回にわたり、洪水予測システム IFAS の機能紹介を行ってきました。無料で入手できる衛星観測雨量を入力データとして採用できる IFAS を利用することにより、水文情報の乏しい地域においても、インターネットに接続している PC さえあれば洪水予測計算が可能となります。

しかし、IFAS にはまだまだ改良すべき点が多くあります。たとえば、衛星

ICHARM has been developing the Integrated Flood Analysis System (IFAS). In the previous newsletters, we introduced the correction method of satellite-based rainfall data, the two runoff analysis engines and model creation based on GIS data. In this issue, we will focus on its function of displaying calculation results.

IFAS can display rainfall, river discharge, the discharge from a tank and the water level in each tank in different forms such as hydrographs, plane views, tables, etc. Since calculation is performed for each single cell by using a distributed hydrological model, it is possible to display the calculation results of any cell in the runoff model.

### 1) Result display on IFAS

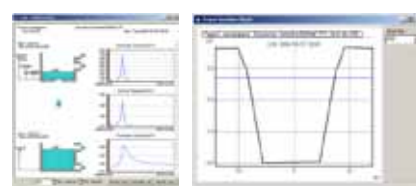
Figure 1 shows the "Result Viewer" of IFAS. IFAS displays not only fundamental information such as DEM and land use but results of calculation. It can produce hydrographs at any single or multiple points. IFAS is also capable of drawing hydrographs based on both calculation results and actual discharges (Figure 2).



Figure 2 Hydrographs of several points

Figure 1 Result Viewer (The green cells are the selected points.)

Figure 3 illustrates tank condition charts of the discharges from the surface and groundwater tanks and the water level in each tank. IFAS is designed to display time-series animations of such charts, which is useful to calibrate parameters.



(left) Figure 3 Tank condition charts  
(right) Figure 4 River cross section chart

IFAS also enables the users to process rainfall or tank condition data and export them as time-series data to a spreadsheet application program like Excel for more thorough analysis.

This analysis system is also capable of importing river cross-section files created beforehand (Figure

4). The users set a factor of the H-Q formula, and IFAS produces a cross section showing the water level corresponding with the discharge.

### 2) Exporting to Google Earth

IFAS can export calculation results such as rainfall distribution and discharge to Google Earth as KML formatted files. By superimposing multiple KML files, the change of rainfall or discharge can be more clearly visualized.

We have introduced the advanced functions of IFAS in the five-part series of articles including this one. As we have explained, IFAS can use satellite-based rainfall data downloadable free of charge. Equipped with a personal computer and Internet access, the users can conduct calculation for flood forecasting even in poorly gauged basins.

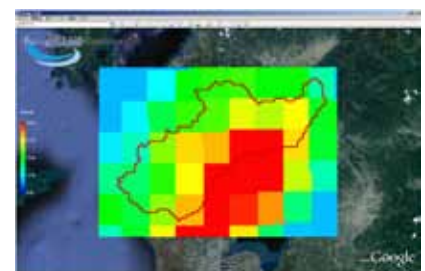


Figure 5 Rainfall distribution on Google Earth

However, the system needs further improvement to increase forecasting accuracy. For example, IFAS's flood forecasting calculated based on satellite-based rainfall data has a limit because rainfall data are greatly affected by orographic rainfall and meteorological and topographic conditions in local areas. To upgrade IFAS for better accuracy, correction methods of satellite-based rainfall data need to be developed for individual areas by verifying corrected results with local ground-based rainfall data.

Besides the system development, ICHARM is also planning to continue carrying out training to disseminate IFAS (Figure 6). In the near future, ICHARM will install IFAS in actual basins and enhance its functions based on practical needs to increase its applicability.

The next series of articles is scheduled to present FAQ on IFAS.

You can download IFAS at: <http://www.icharm.pwri.go.jp/research/ifas/index.html>

(For inquiry, contact the ICHARM Hydrologic Engineering Research Team :suimon@pwri.go.jp)

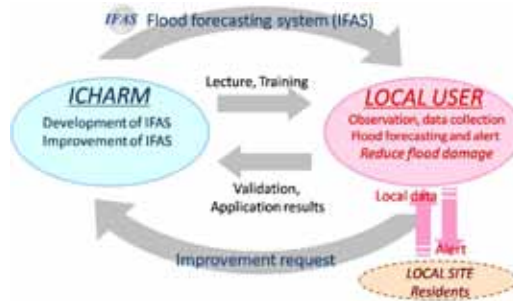


Figure 6 Improvement cycle of IFAS

観測雨量の補正方法の精度向上についてです。地域や気象条件、地形条件により、補正手法が大きく異なるため、各国での地上観測雨量データを収集して、詳細に検討する必要があります。

ICHARM では国内外で IFAS 研修等の普及活動を実施しています。その際、現地の技術者の方々に実際に使用してもらい、計算結果や要望を聞き取り、ソフトウェアの改良に役立てています。また、実際に現地に導入を行い、実務上のニーズを踏まえた機能の追加、拡充を図っていく予定です。そのためにも読者の皆様に IFAS を使っていただきご意見・ご要望をいただきたいと思ひます。

次回からは IFAS の FAQ を掲載します。

IFAS のダウンロード :

<http://www.icharm.pwri.go.jp/research/ifas/index.html>

(問い合わせ先 / ICHARM 水文チーム : suimon@pwri.go.jp)

## IFAS Training Workshop (India, 12-15 May 2010)



A meeting on IFAS with Orissa State engineers

A team of ICHARM researchers visited Orissa State, India, from 12 to 15 May 2010 with a specialist of the Asian Development Bank and had an active discussion with the local engineers about IFAS.

Orissa State was hit by a super cyclone in 1999, when the Baitarani River breached and caused inundation.

In the area where such a water-related disaster occurred, there are needs for flood forecasting to encourage early evacuation. However, it has been difficult due to an insufficient number of precipitation stations installed there.

Therefore, the State of Orissa shows high expectations for the introduction of a flood forecasting system using satellite-based rainfall data, namely IFAS, which are discussed in this workshop.

ICHARM researchers also went on a survey tour to the lower Baitarani river basin. They inspected the present condition of the river bank which had breached in 1999, an irrigation channel which maximizes the river function, barrages and other structures and places. The tour was a good opportunity to learn that the Orissa state government has high technical capability and is seriously addressing water-related disaster prevention and water resource management.

Understanding the high expectations of local people for IFAS, as flood forecasting and base model of early warning system, ICHARM is planning to make further examination on the introduction of IFAS to the Baitarani river basin and present project proposals to the Indian government and the Orissa state government.

(For inquiry, contact the ICHARM Hydrologic Engineering Research Team :suimon@pwri.go.jp)



The breach point in the 1999 flood (In front of the river bank is an irrigation channel. The Baitarani River runs beyond the bank.)

5月12日～15日にかけて、アジア開発銀行の専門家とともにインド・オリッサ州を訪れ、IFASについて、現地技術者と活発な議論を行いました。

オリッサ州では1999年に襲ったスーパーサイクロンによって、Baitarani川で破堤、浸水の被害が発生しました。

このような水災害被災地域では、早期避難を実現するためにも、洪水予測技術が必要とされていますが、未だ十分な数の雨量観測所が設置されておらず、洪水予測が難しい状態にあります。

そのため、今回WSで議論した衛星観測雨量データを用いた洪水予測システムの導入(IFASの適用)に対してオリッサ州から大きな期待が寄せられています。

また、ICHARMスタッフはBaitarani川の状態、破堤地点や、河川を高度に利用した灌漑用水路、堰などの現状を視察し、オリッサ州政府技術者の高い技術力と情熱を感じました。

ICHARMでは、洪水予測と早期予警報のベースとして、大きな期待を寄せられているIFASのBaitarani川流域への導入に向けて、更なる検討を進め、インド政府、オリッサ州政府へ提案を行う予定です。

(問い合わせ先 / ICHARM 水文チーム : suimon@pwri.go.jp)

# Other Topics

## New ICHARM Members

ICHARM に新たなスタッフが 6 人加わりました。今後の彼らの活躍に期待します。

**加本実 首席研究員 (特命事項担当)** は、ADB に関する業務や、第 5 回洪水対策国際会議などを担当します。これまで、海外経済協力基金 (技術審査)、河川局課長補佐 (国際関係)、メコン河委員会 (流域開発計画)、フィリピン国公共事業道路省 (統合河川管理)、などの国際業務・海外勤務を経験しています。

**中須正 専門研究員 (防災チーム)** は、発展途上国の地域レベルに適応可能な洪水災害準備指標の開発を主に行います。以前は (独) 防災科学技術研究所で、災害経験及びその社会的影響などの研究、及び災害に関わる情報発信業務を 5 年間行っていました。

**宮本守 専門研究員 (水文チーム)** は、IFAS の改良とアジアの国々への導入などの業務を行います。さらに、WEP モデルの改良業務も行う予定です。以前は日本大学理工学部社会交通工学科で助手をしていました。

**牛山朋来 専門研究員 (水文チーム)** は、レーダ等による降雨予測の業務を担当します。以前は (独) 海洋研究開発機構などでレーダ等による降水現象の研究を行ってきました。

**長谷川聡 専門研究員 (水文チーム)** は、気候変化が洪水流出に与える影響に関して研究します。以前は (独) 国立環境研究所で GCM を用いて温暖化時の熱帯低気圧を研究しました。

**郭榮珠 専門研究員 (水文チーム)** は、社会経済的指標を用いた洪水リスク評価手法の開発と、そのための社会経済データベースの開発などを行います。さらに、これまでの、千葉大学環境リモートセンシング研究センター (CEReS) の研究員としての水害危険度評価に関する研究実績を活かし、洪水予測不確実性の評価手法の開発も担当します。

Six more members joined ICHARM in June and July. The following are brief profiles of the new staff members.

### Minoru Kamoto (Chief Researcher for Special Assignment)



Mr. Kamoto will be responsible for ADB-related activities, the 5th International Conference on Flood Management (scheduled in September 2011), as well as other important issues. He has had a great deal of experience in international affairs at various offices including: the Overseas Economic Corporation Fund (now JICA) for technical appraisal, the River Bureau of the Ministry of Construction (now MLIT), the Mekong River Commission in both Phnom Penh and Vientiane for the Basin Development Plan (BDP), and the Department of Public Works and Highways (DPWH) in Manila for integrated river management.

### Tadashi Nakasu (Research Specialist, Disaster Prevention Research Team)

Mr. Nakasu will be working mainly on the development of Flood Disaster Preparedness Indices (FDPI) for local communities in developing countries. Previously, he worked at the National Research Institute for Earth Science and Disaster Prevention as an expert in analysis of disaster experiences and social impacts of natural disasters and dissemination of natural disasters information.



### Mamoru Miyamoto (Research Specialist, Hydrologic Engineering Research Team)



Dr. Miyamoto will be working on the improvement and installation of IFAS in Asian countries, as well as the improvement of the WEP model. Before coming to ICHARM, he was a research associate at the Department of Transportation Engineering and Socio-Technology, College of Science and Technology, Nihon University.

### Tomoki Ushiyama (Research Specialist, Hydrologic Engineering Research Team)

Dr. Ushiyama will be working on the research and development of a rainfall forecasting system using MP radar data. Previously, he worked at the Japan Agency for Marine Earth Science and Technology as an expert in development mechanism of precipitation systems.



### Akira Hasegawa (Research Specialist, Hydrologic Engineering Research Team)



Dr. Hasegawa will be working on impact assessment of climate change on flood runoff using multi model projections, including GCM20. At his previous workplace, the National Institute for Environmental Studies, he was assigned to research on extreme events such as tropical cyclones in warmer climate based on GCM simulation.

### Youngjoo Kwak (Research Specialist, Hydrologic Engineering Research Team)

Dr. Kwak will be working on the development of a flood risk assessment method using socio-economic indices combined with a hydrological and inundation simulation system. He will also be responsible for the research and development of uncertainty assessment methods for flood risk using GIS, topographic models and satellite images. Before coming to ICHARM, he was a fellow researcher at the Center for Environmental Remote Sensing (CEReS) of Chiba University.



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