

14 February 2018 Tokyo, Japan

ICHARM / PWRI

International Centre for Water Hazard and Risk Management
under the auspices of UNESCO,
Public Works Research Institute (PWRI), Japan



United Nations
Educational, Scientific and
Cultural Organization



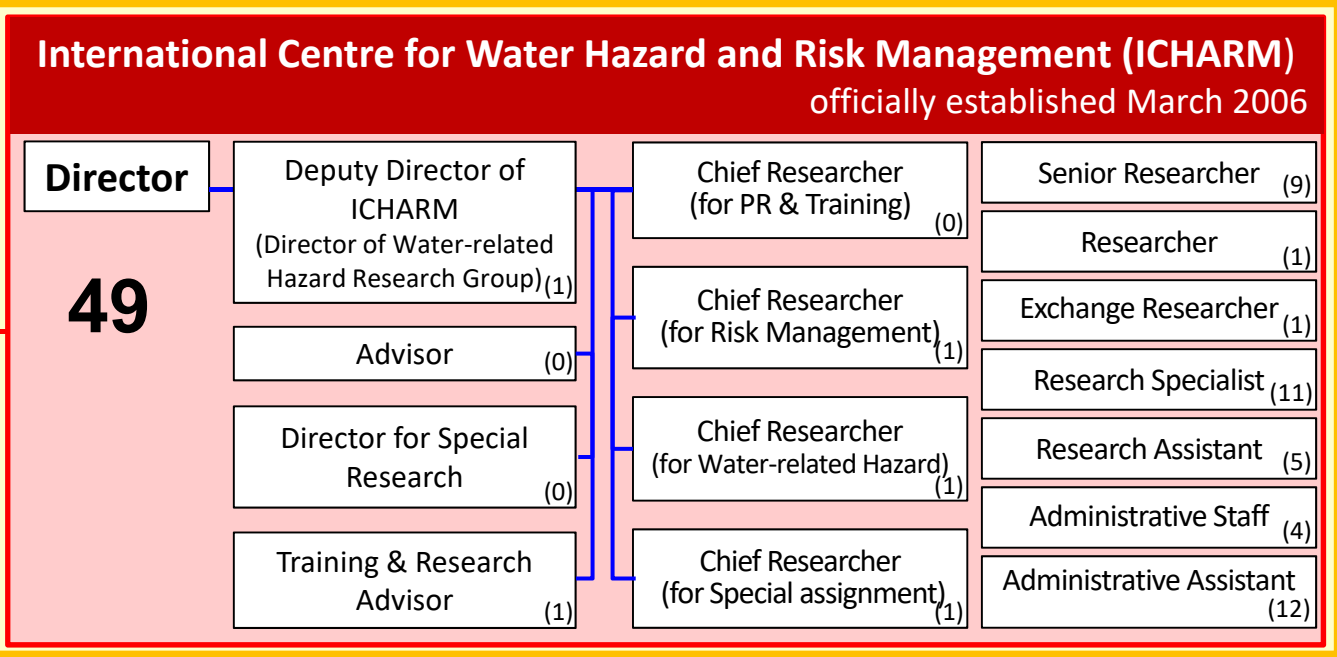
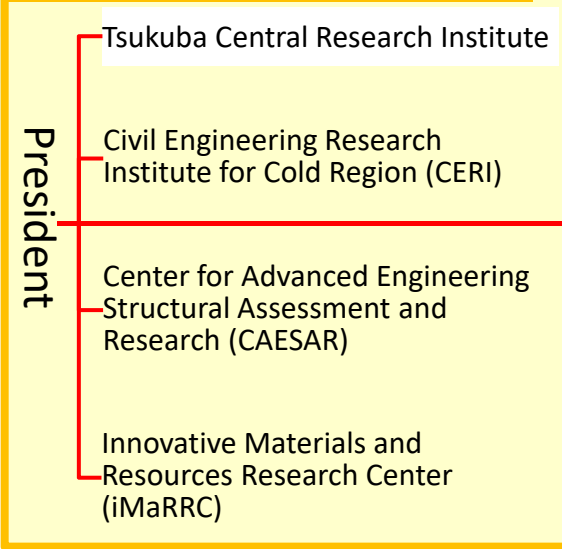
International Centre for
Water Hazard and Risk Management
under the auspices of UNESCO



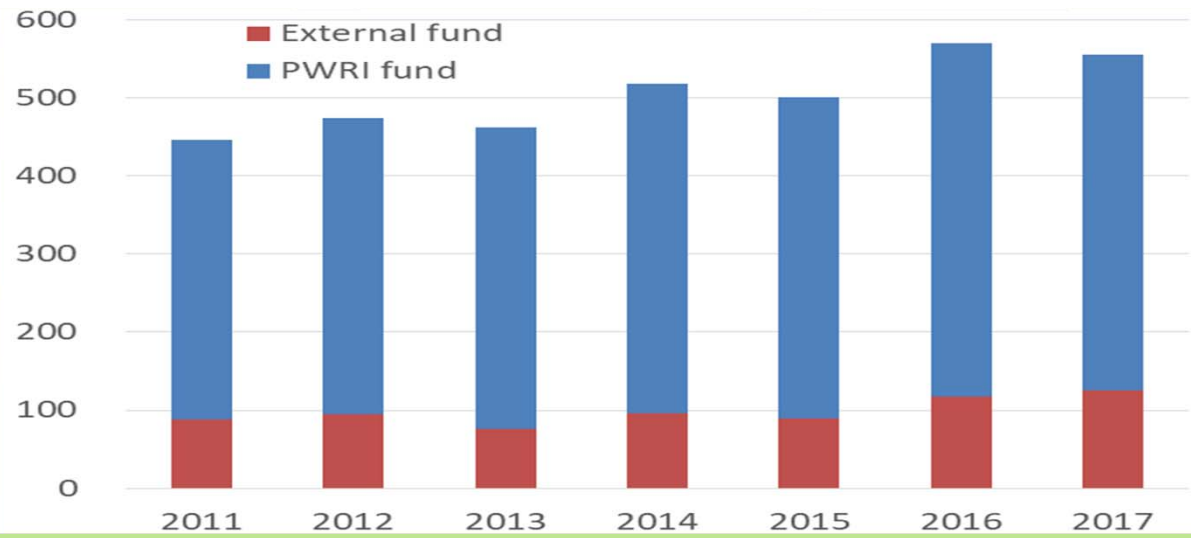
Public Works Research Institute,
National Research and Development
Agency, Japan

Organization & Budget

Public Works Research Institute (PWRI)

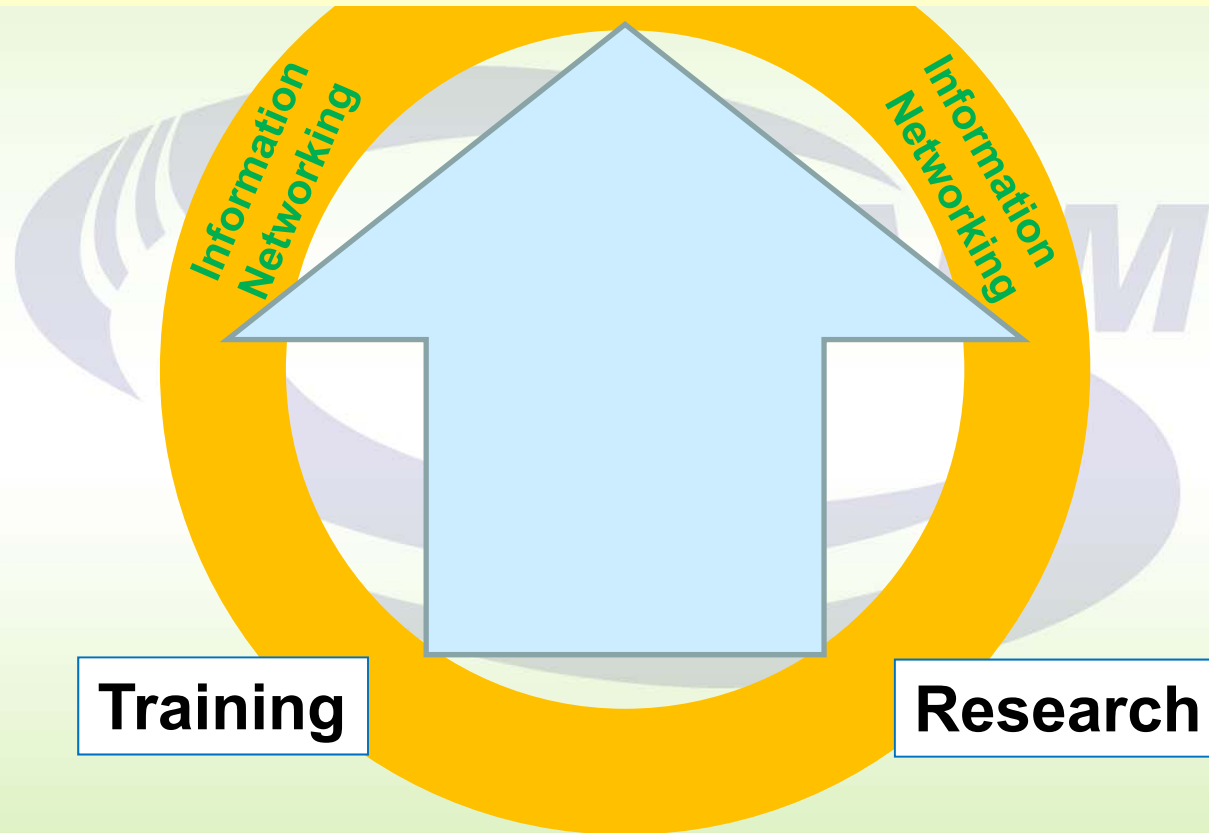


(million yen)



Challenge to Localism

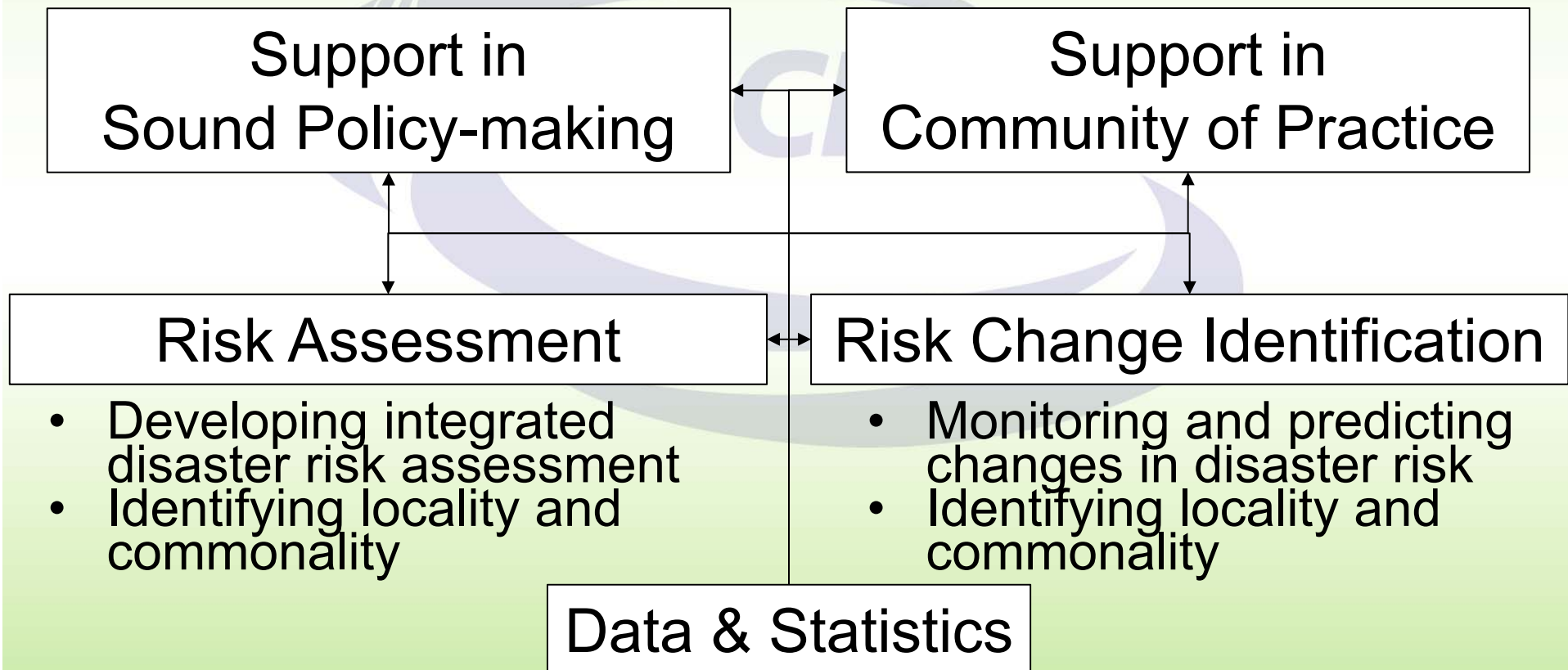
Delivering best available knowledge to local practices



Long Term Targets

- Analyzing and formulating policy ideas
- Visualizing values of preparedness and investment efficiency

- Improving disaster literacy
- Promoting co-design and co-implementation among stakeholders

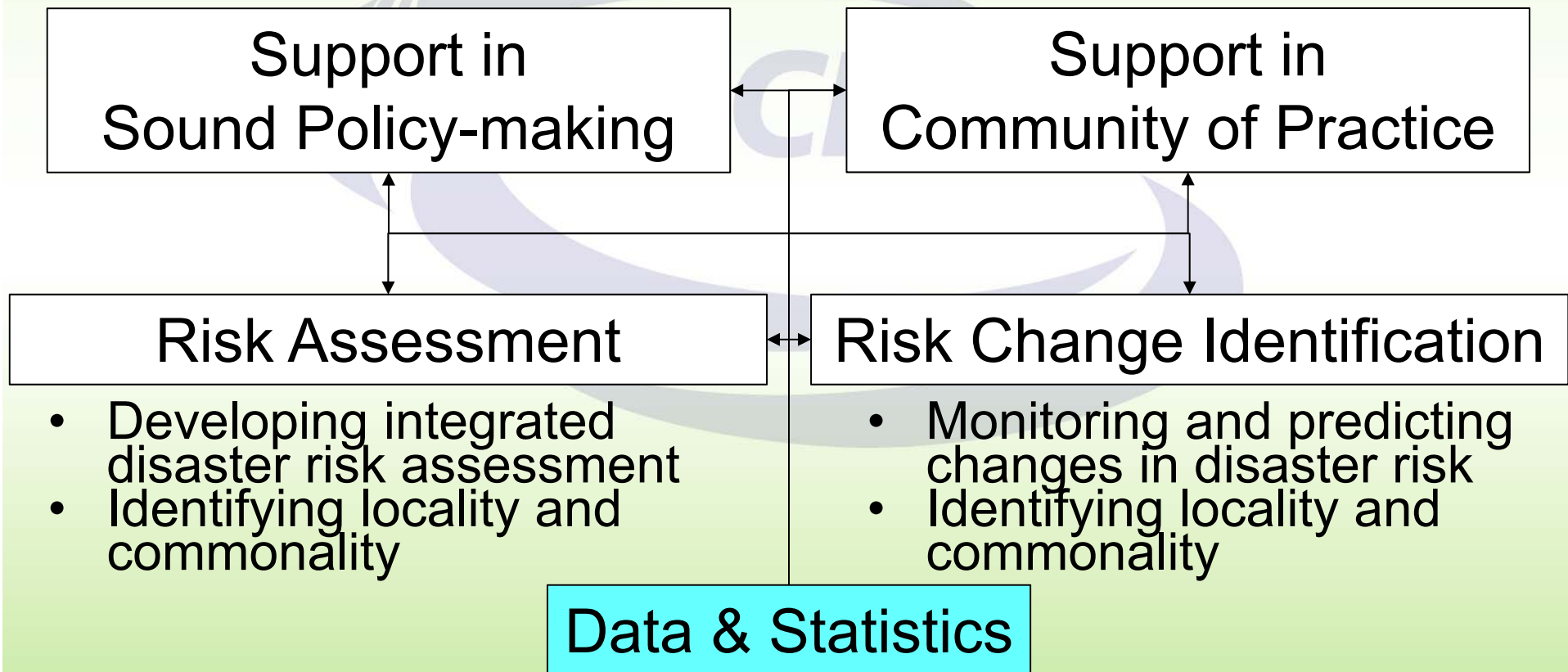


- Promoting data collection, storage, sharing, and statistics
- Integrating local data, satellite observations and model outputs

Long Term Targets

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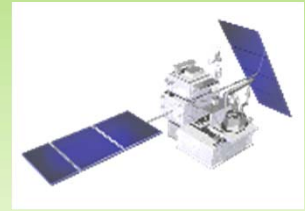
- Developing integrated disaster risk assessment
- Identifying locality and commonality

- Monitoring and predicting changes in disaster risk
- Identifying locality and commonality

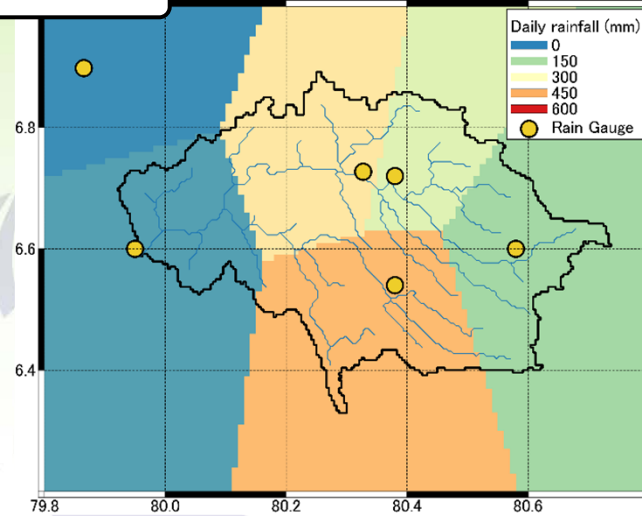
- Promoting data collection, storage, sharing, and statistics
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Real-Time Data Transfer System in the Kalu River Basin

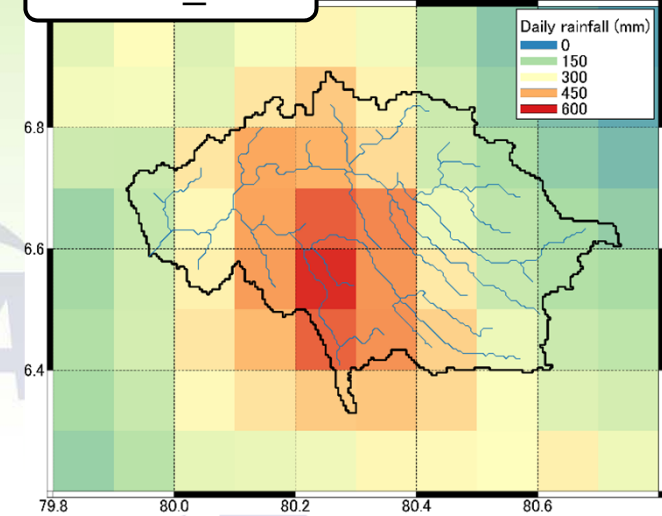
Data & Statistics



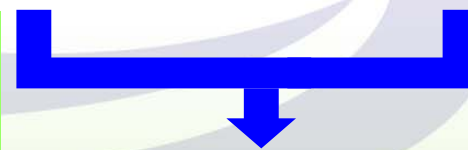
Ground



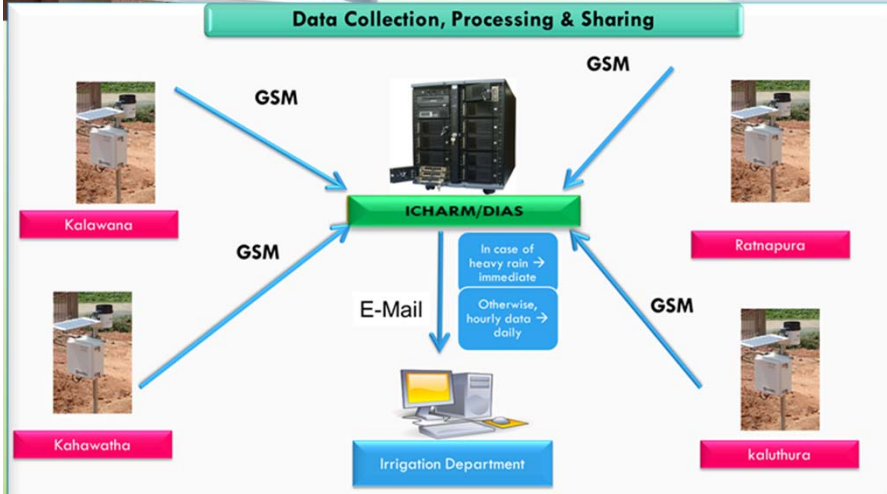
GSMaP_NRT



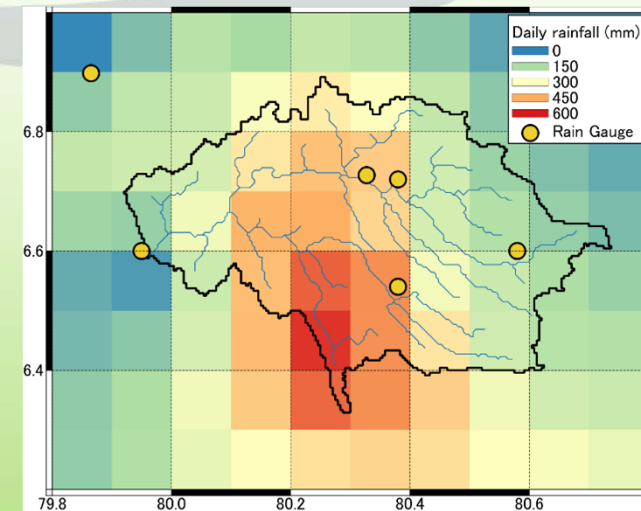
Error of rainfall area location
Bias of rainfall intensity



Data Collection, Processing & Sharing



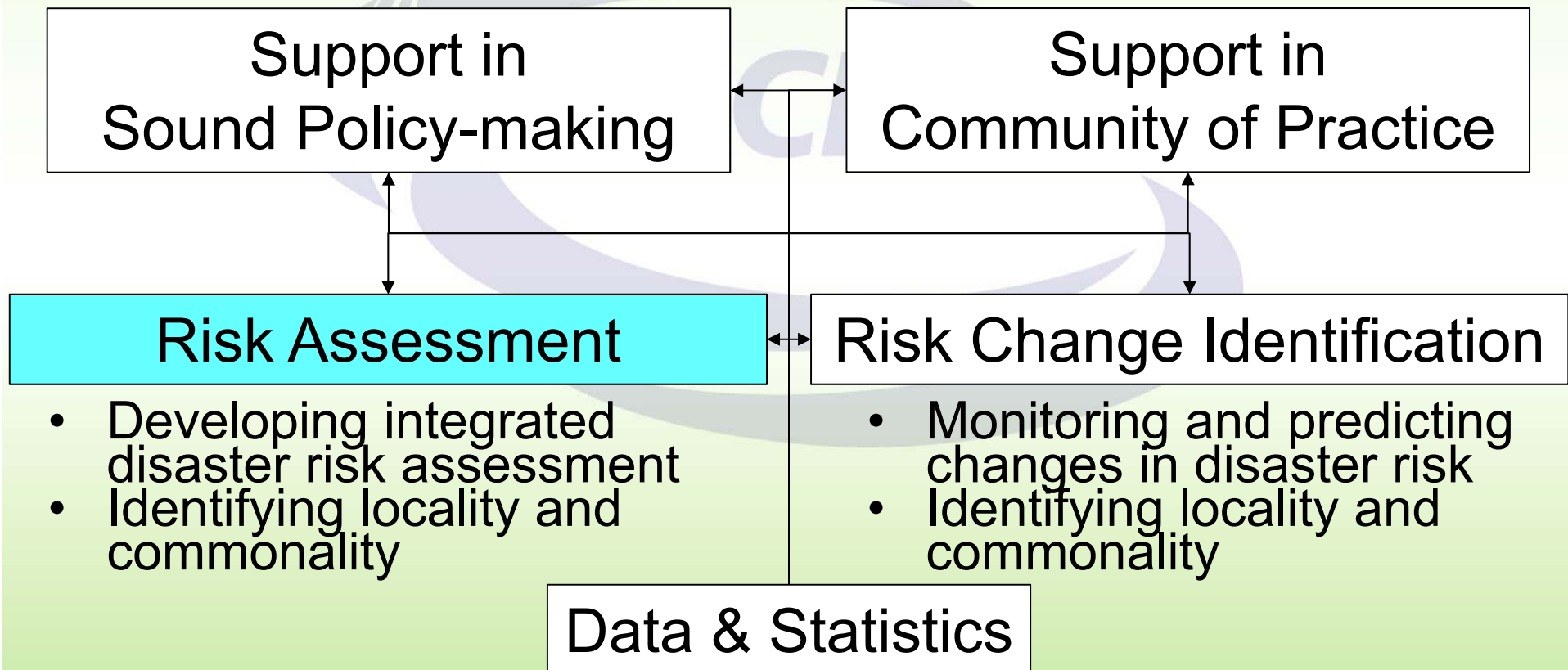
Bias corrected GSMaP



Long Term Targets

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- Visualizing values of preparedness and investment efficiency

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- Promoting co-design and co-implementation among stakeholders

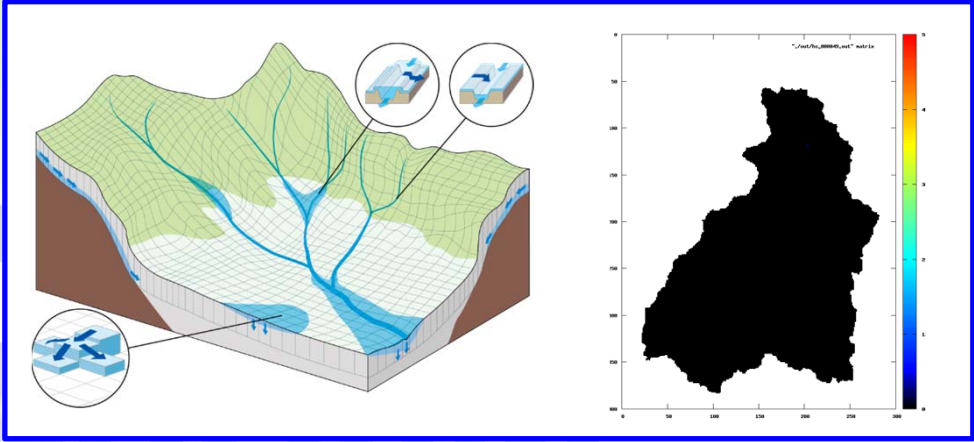
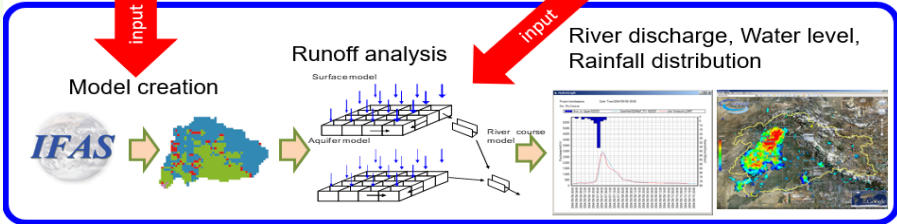
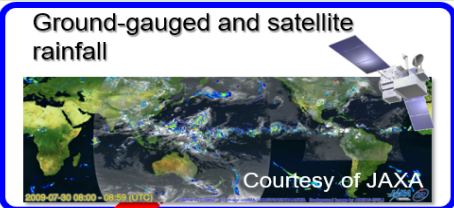
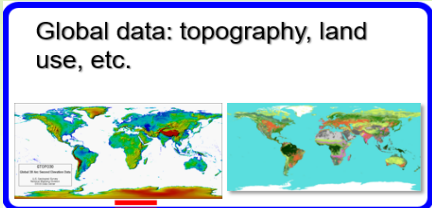


- Developing integrated disaster risk assessment
- Identifying locality and commonality

- Monitoring and predicting changes in disaster risk
- Identifying locality and commonality

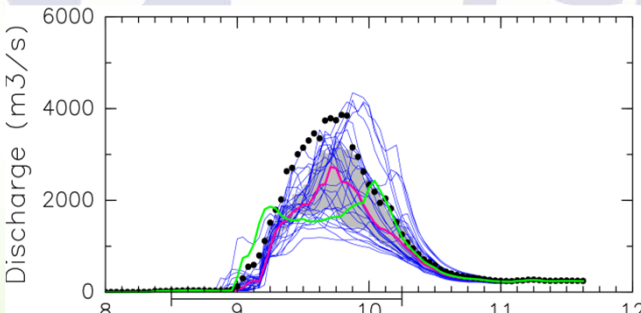
- Promoting data collection, storage, sharing, and statistics
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Risk Assessment



Integrated Flood Analysis System (IFAS)

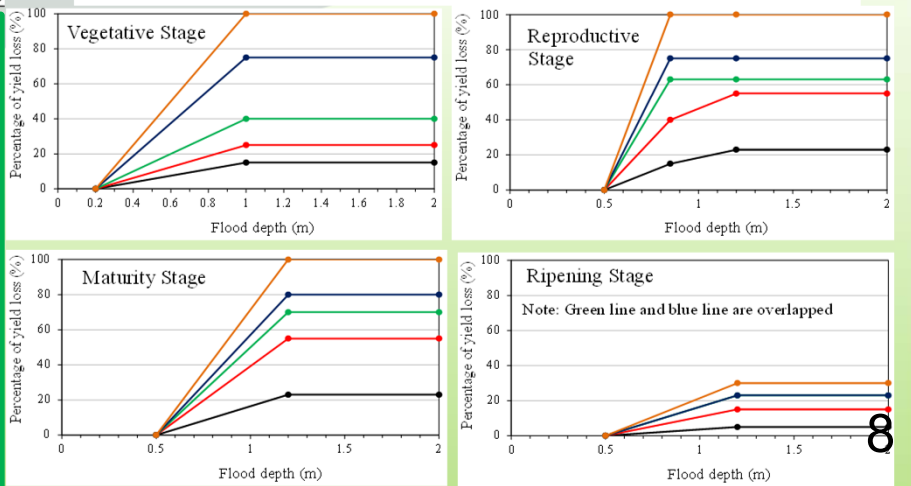
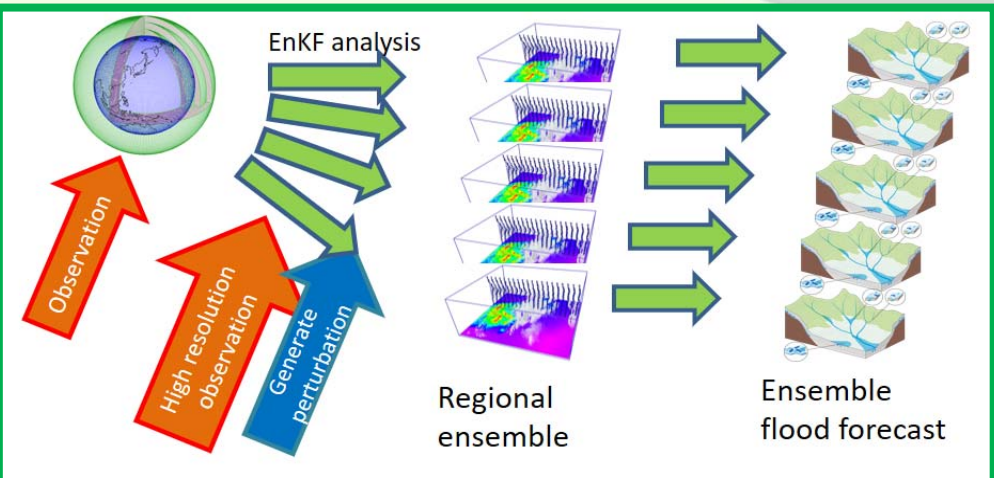
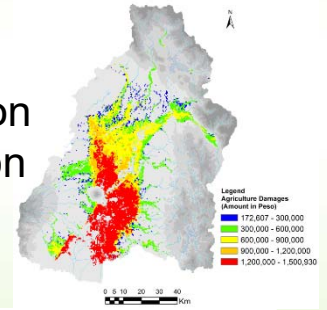
Ensemble Flood Prediction



Rainfall-Runoff-Inundation (RRI)

Flood Impact on Rice Production

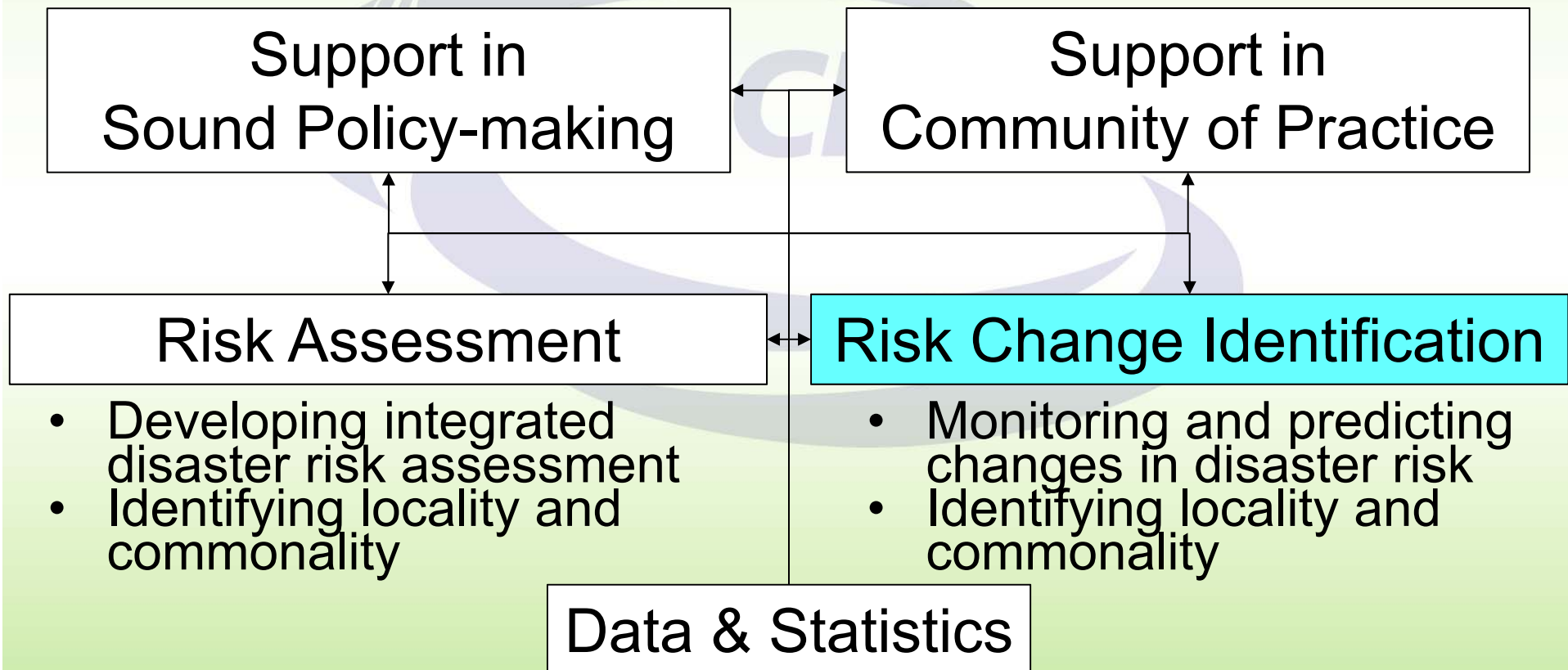
Rice Production Fragility Curve



Long Term Targets

- Analyzing and formulating policy ideas
- Visualizing values of preparedness and investment efficiency

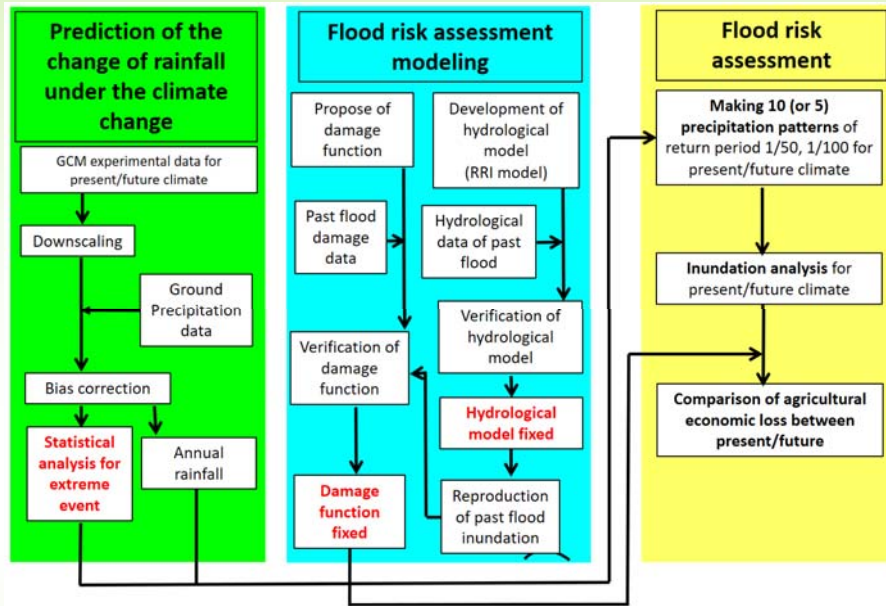
- Improving disaster literacy
- Promoting co-design and co-implementation among stakeholders



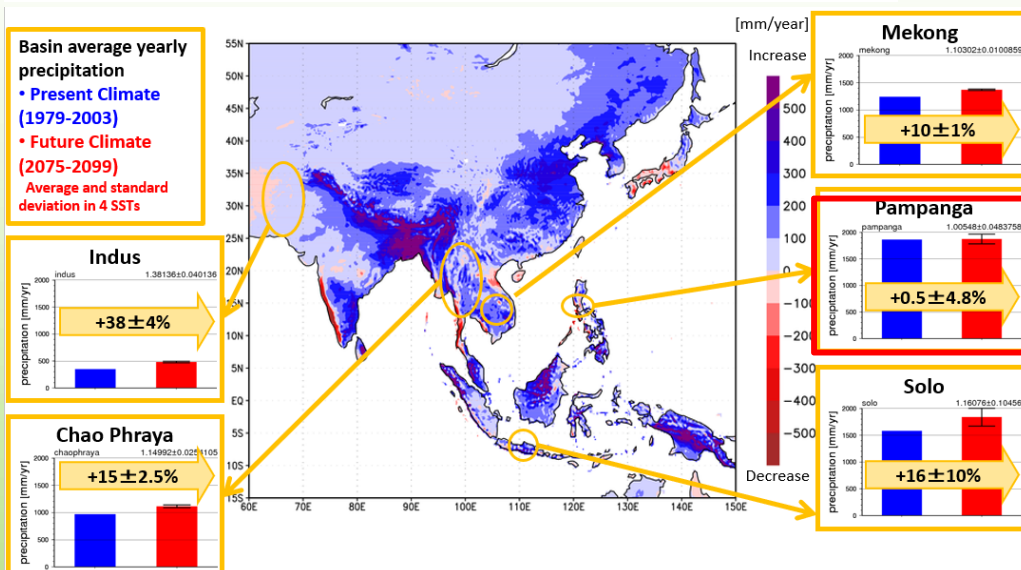
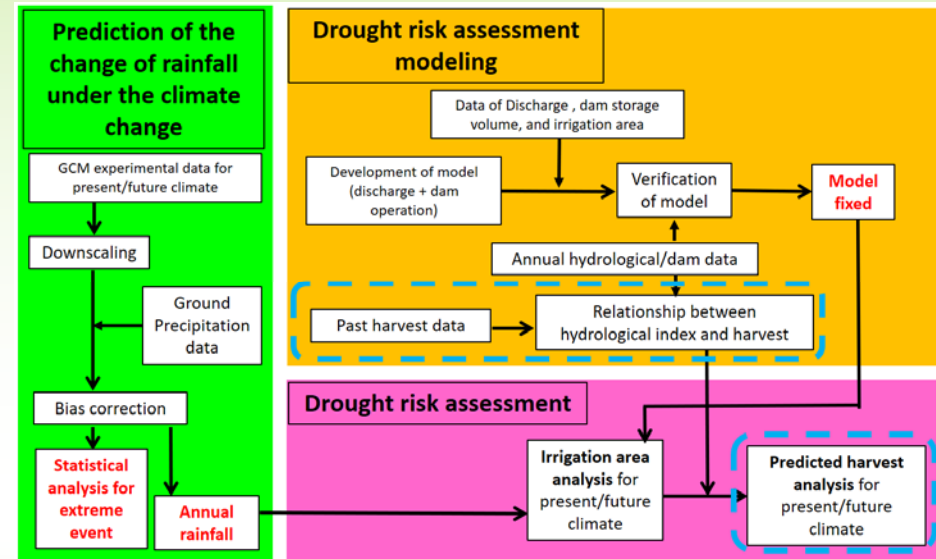
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Risk Change Identification

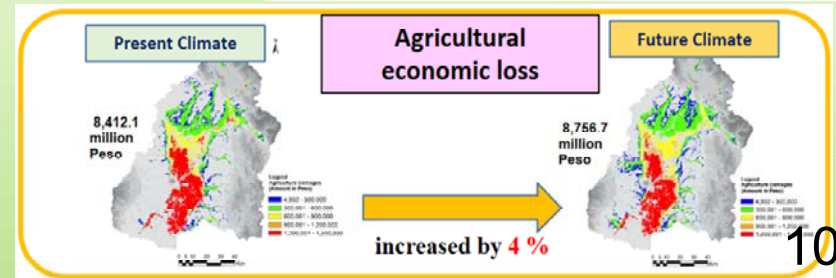
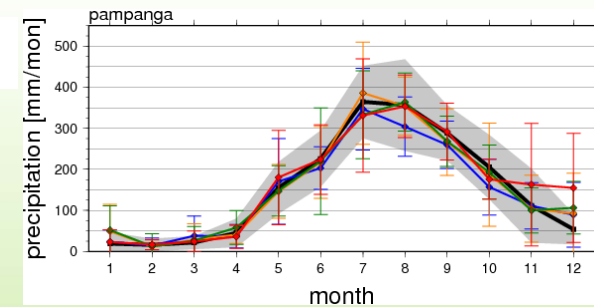
Flood Risk Change



Drought Risk Change



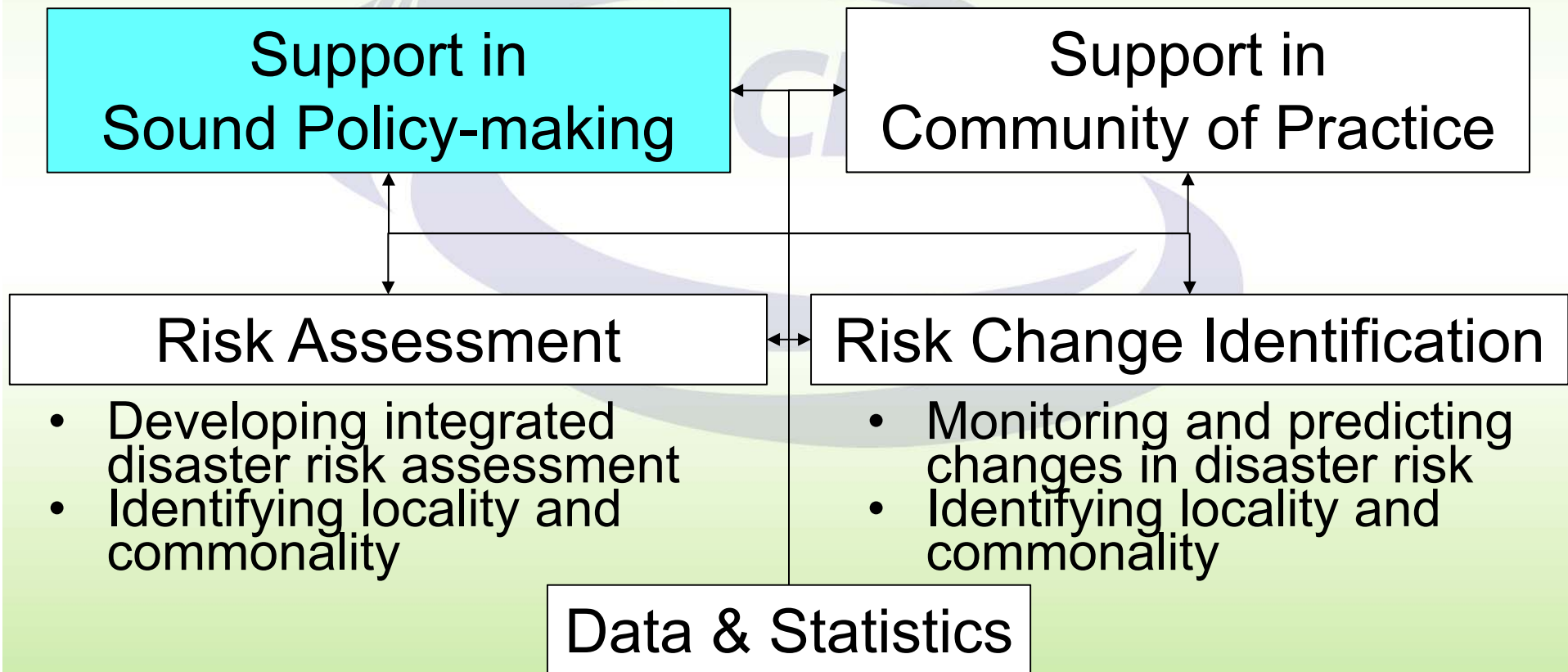
Pampanga



Long Term Targets

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- Promoting data collection, storage, sharing, and statistics
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Support in Sound Policy-making

Component of the Pakistan Flood Project -Phase 2- 8 Key components



A. Establishment of the technical foundation for sustainable capacity development on the flood management, forecasting, early warning and flood hazard analysis in Pakistan agencies

- A-1 Technical studies on the improvement of the accuracy of flood forecasting and early warning system in Pakistan*
- A-2 Strengthening the flood forecasting and warning capacity in Eastern Rivers (Jhelum, Chenab, Ravi and Sutlej rivers)*
- A-3 Strategic and continuous enhancement of the flood management capacity in Pakistan*

B. Technical studies to promote strengthening of cooperation with Indus river basin countries for transboundary flood management and transboundary data sharing

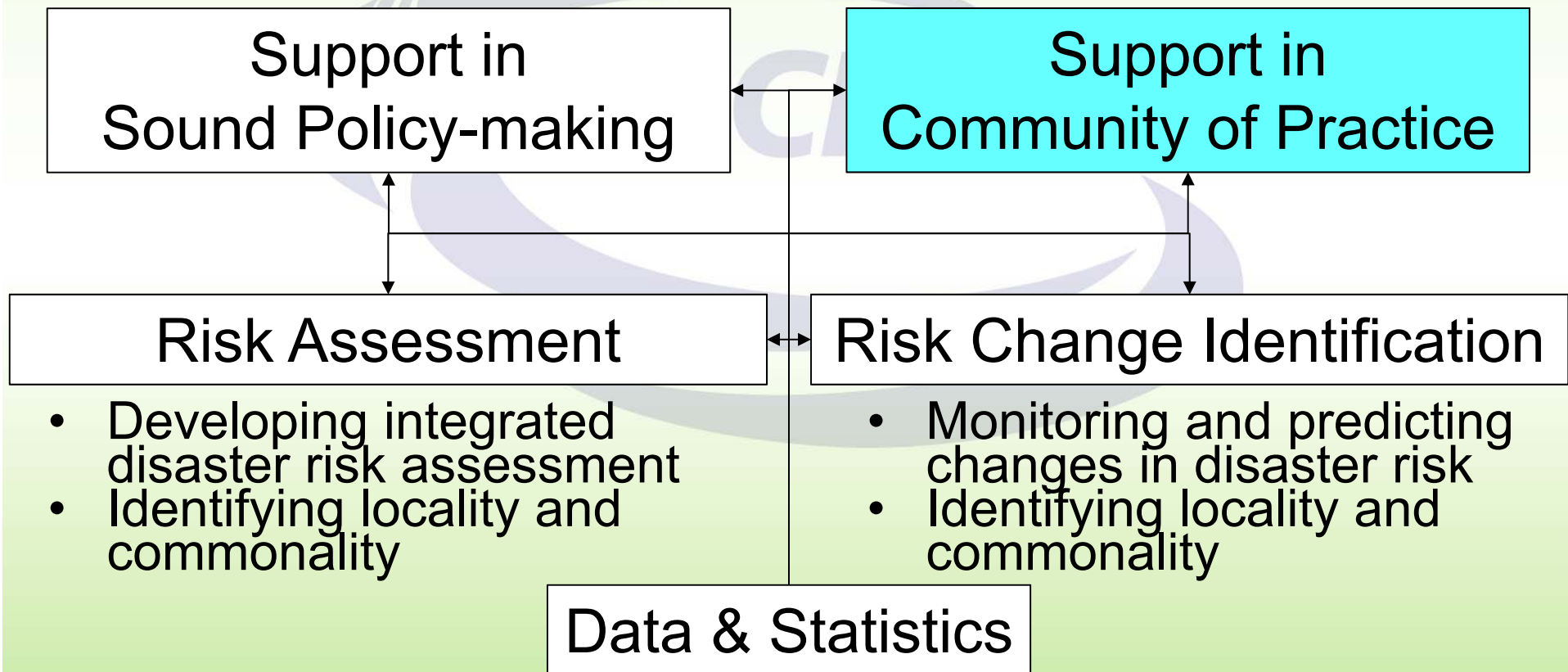
- B-1 Technical studies on strengthening of the transboundary flood management capacity of the Indus river basin countries*
- B-2 Reinforcement of the relationship within the Indus river basin countries for transboundary flood management and data sharing*

C. Capacity building and education to community on flood management for proper utilization of flood hazard information and tools (3 components)

Long Term Targets

- Analyzing and formulating policy ideas
- Visualizing values of preparedness and investment efficiency

- Improving disaster literacy
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- Developing integrated disaster risk assessment
- Identifying locality and commonality

- Monitoring and predicting changes in disaster risk
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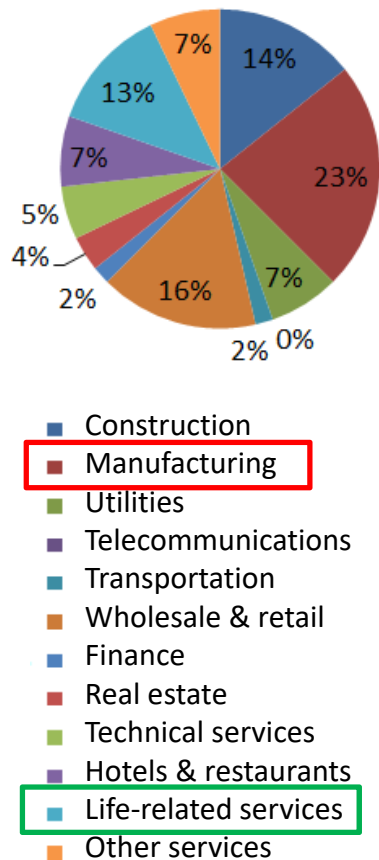
- Promoting data collection, storage, sharing, and statistics
- Integrating local data, satellite observations and model outputs

Resilience of Business Sector in Joso City

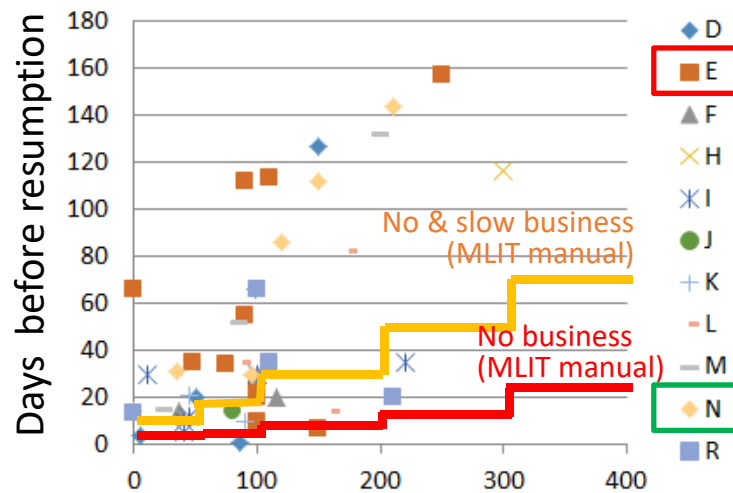
-Case study in Joso City after the Kanto-Tohoku Heavy Rainfall in September 2015-

Heavy rainfall in September 2015 hit the Kinu River basin, causing the river to overflow and breach dikes in Joso City, Ibaraki Prefecture, Japan. Roughly 60% of the businesses in eastern Joso City were affected due to wide-area inundation. ICHARM conducted an interview survey for the local businesses affected by the flood to understand the resilience of the business sector.

Types of businesses



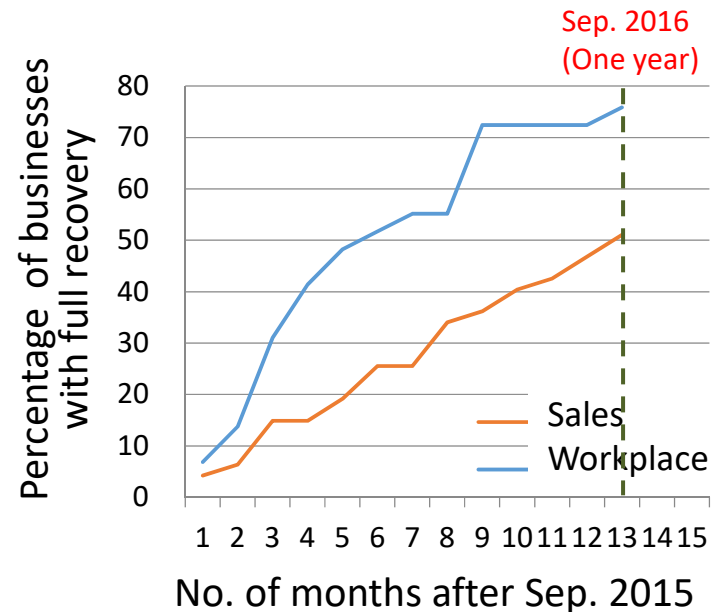
Relationship between inundation height and business disruption



Inundation height above first floor (cm)

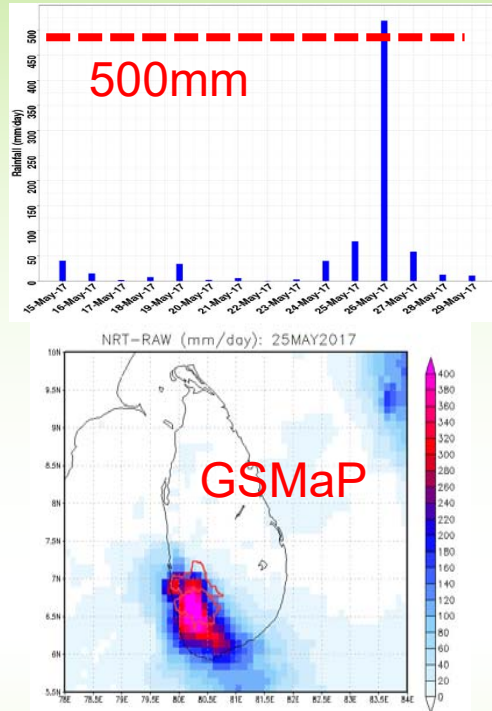
Actual business disruption was severer than estimation based on an MLIT manual. Some businesses experienced disruption due to suspension of water supply even with low inundation.

Trends of recovery of sales and workplace

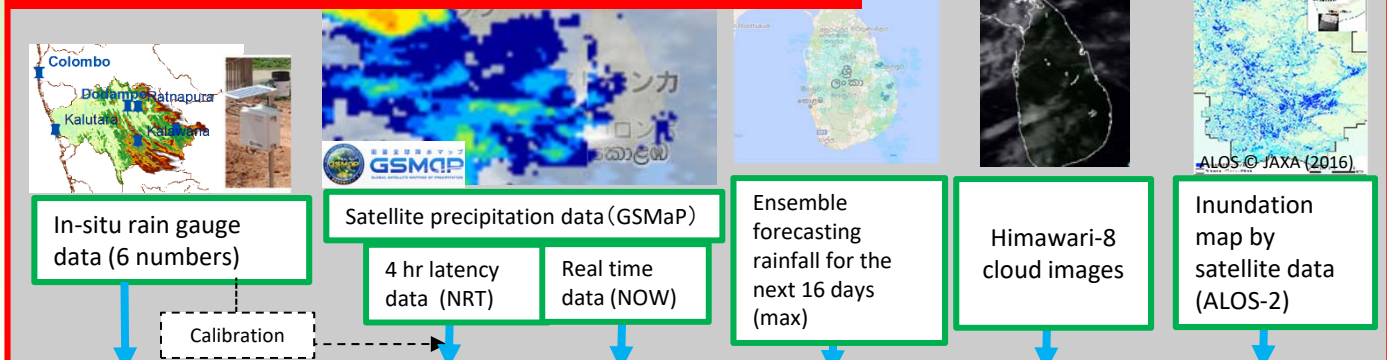


Only half of the businesses achieved 100% sales recovery a year after the disaster. Local economy is still in the middle of recovery.

Integrated Activity: Flood Information Sharing Support in Sri Lanka



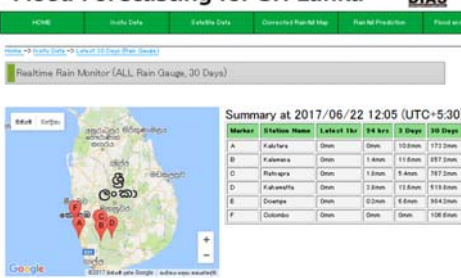
Implemented by EDITORIA and ICHARM on DIAS



Flood Forecasting for Sri Lanka

On-line Information provision on DIAS: In-situ rainfall, satellite rainfall, calibrated and forecast rainfall, inundation simulations

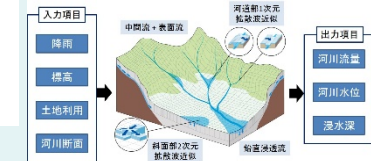
Flood Forecasting for Sri Lanka



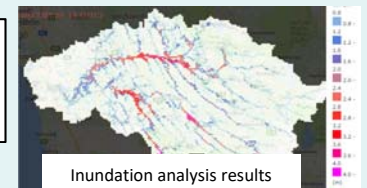
Inundation analysis by using RRI in DIAS

RRI model

Simulation and forecasting of river discharge, water level, inundation extent



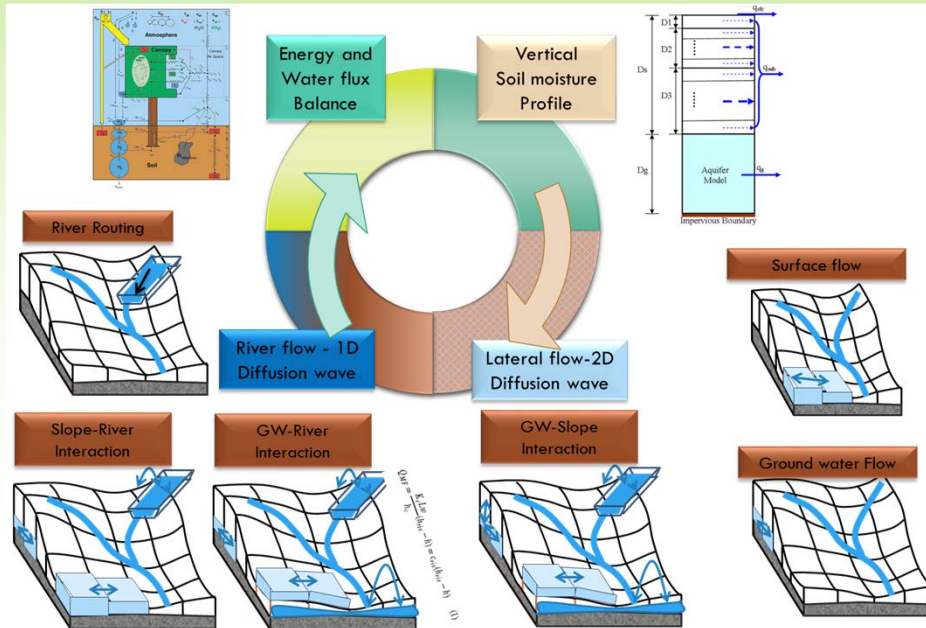
Concept of RRI model



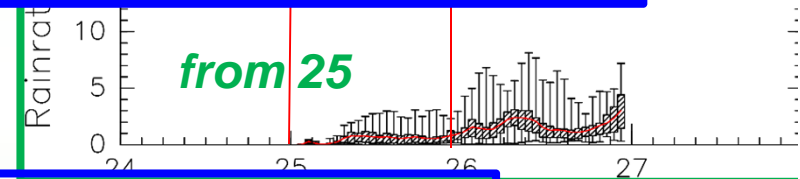
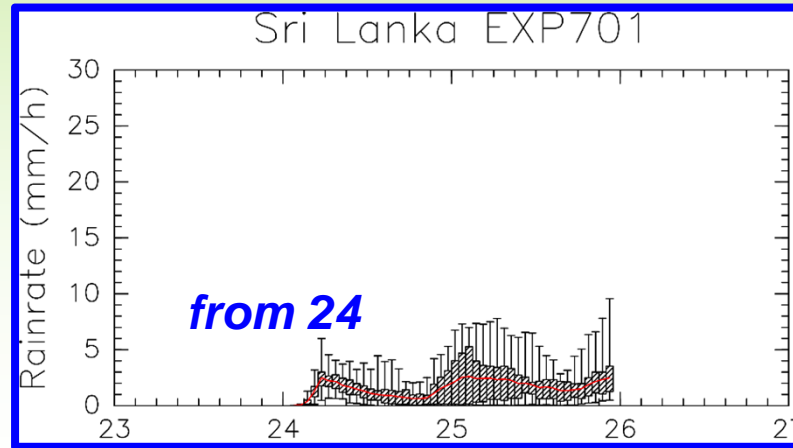
Japan Disaster Relief Expert Team (JDR)



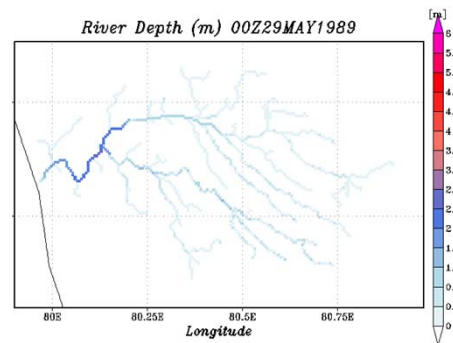
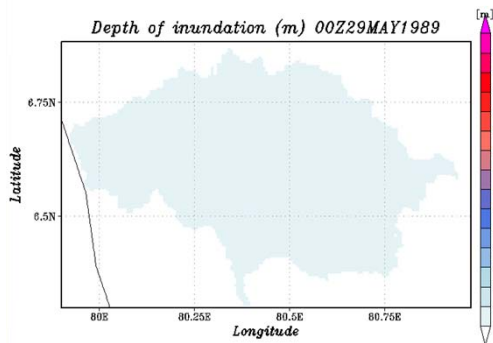
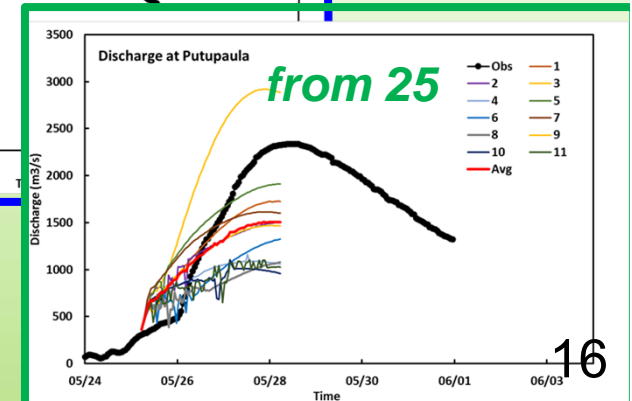
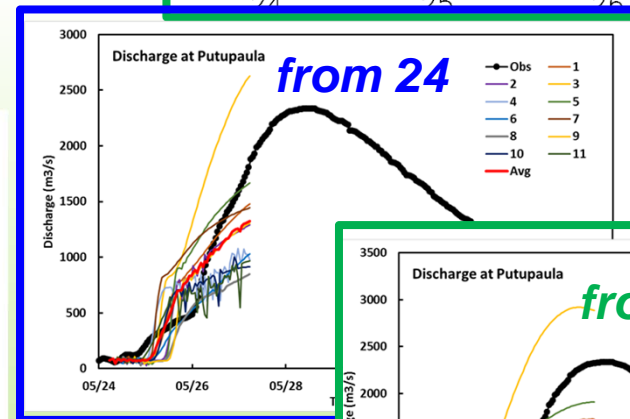
Integrated Activity: Flood Information Sharing Support in Sri Lanka



Ensemble Flood Prediction



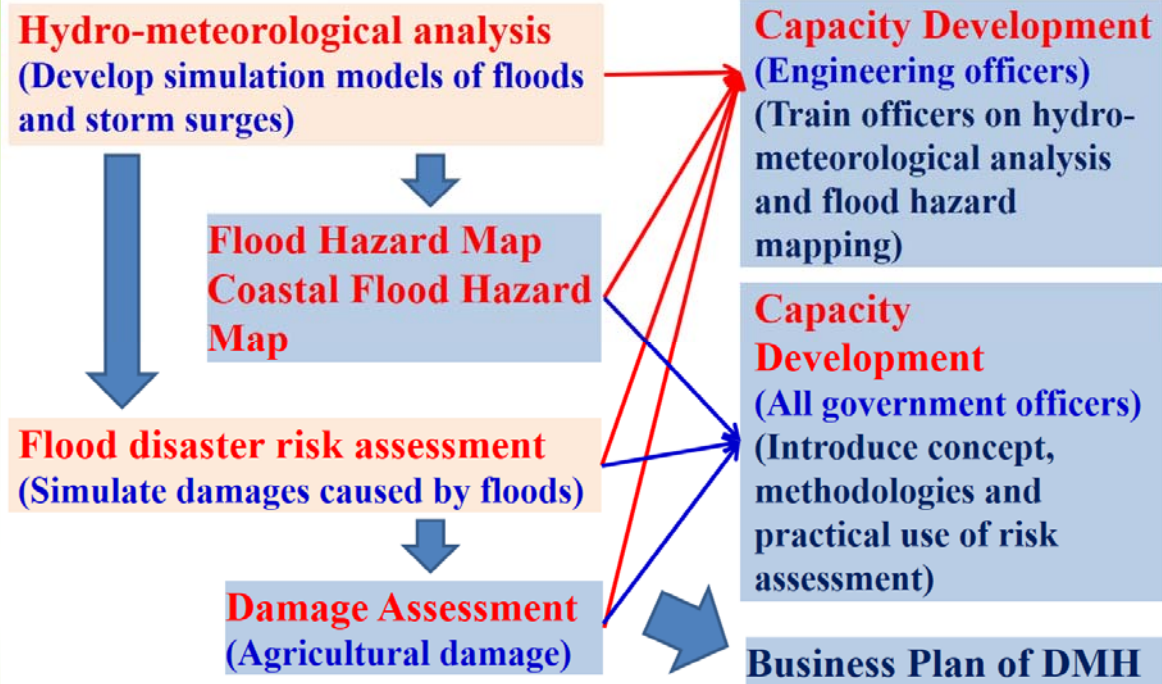
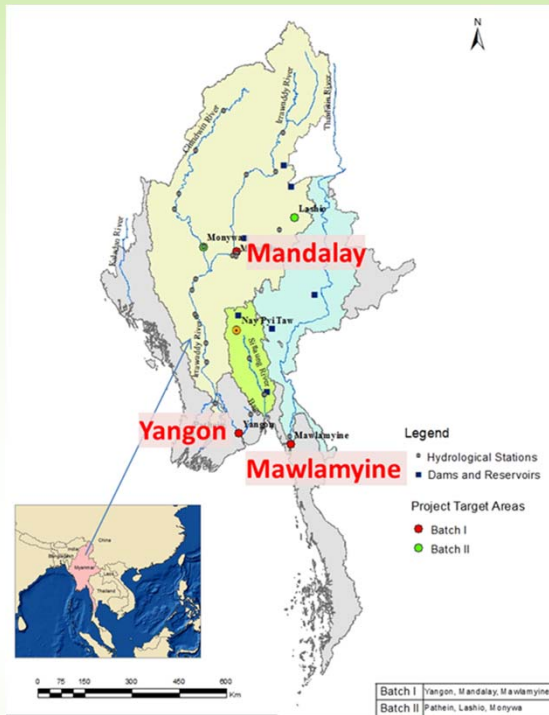
Z HEUJ# rghdlog#w# dnu#rpsrghw#



Topogdwrq#

Uyhu#Z dnu#rghw#

Integrated Activity: Flood Mapping in Myanmar (ADB Project)



Yangon



2007 Flood



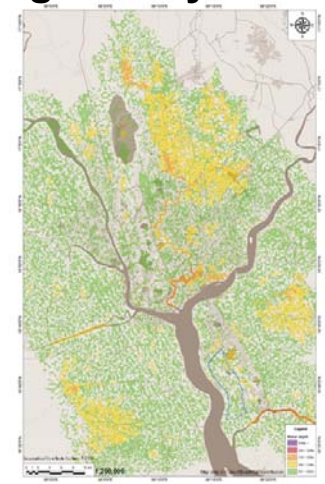
100year Flood



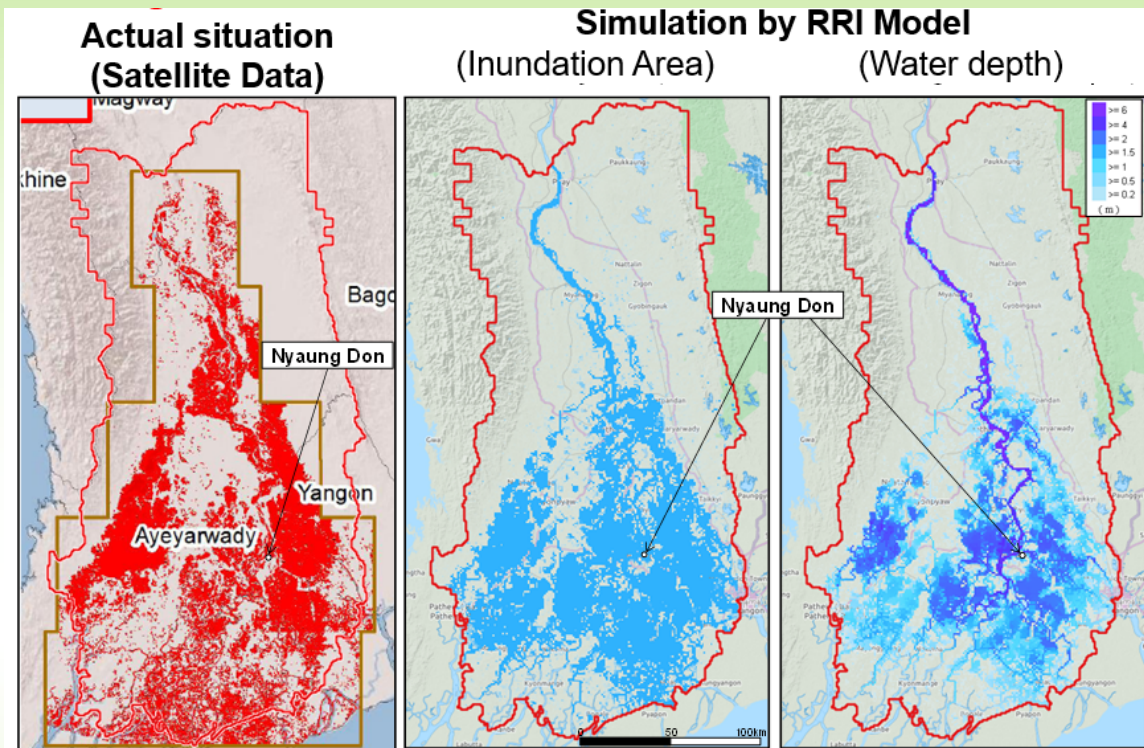
Nargis (2008)



Nargis+100year Flood



Integrated Activity: Flood Mapping in Myanmar (ADB Project)



Develop RRI Simulation Model for Cyclone Komen (2015)

Capacity Building Program

- A. Basic Training Programs on RRI model and Storm Surge
- B. Training Programs for Trainer Candidates
- C. RRI Model Training organized by the Trainers

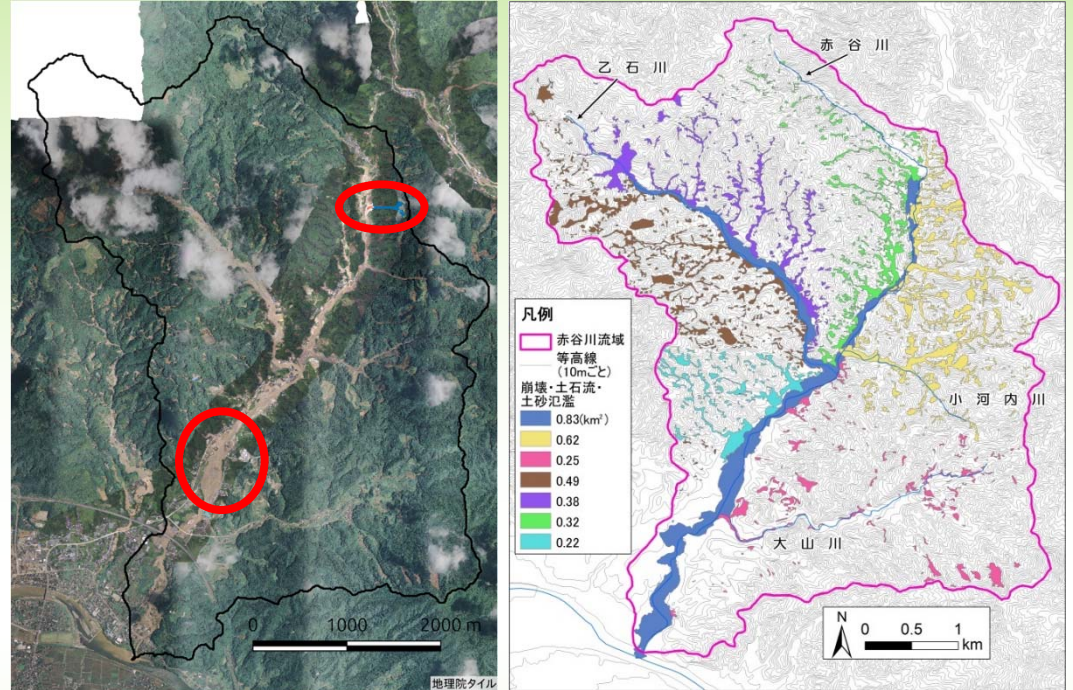
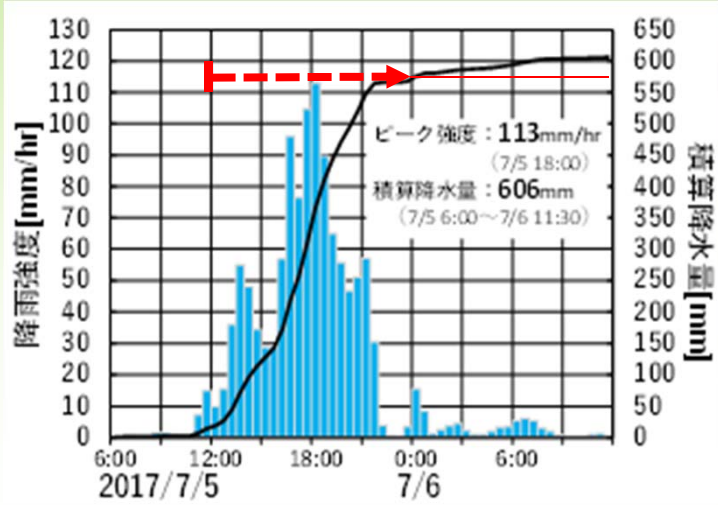


H.E. U Phyo Min Thein (Chief Minister of Yangon Region)
(17 Aug. 2016)



H.E. U Maung Maung Soe (Mayor of YCDC)¹⁸
(19 Aug. 2016)

Integrated Activity: Sediment Disaster Simulation in Northern Kyushu



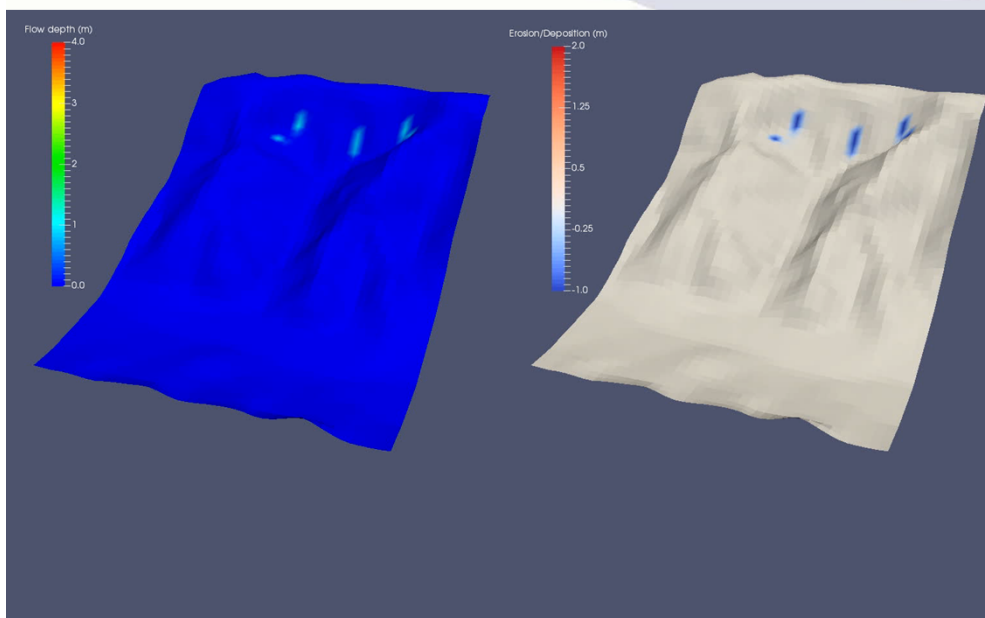
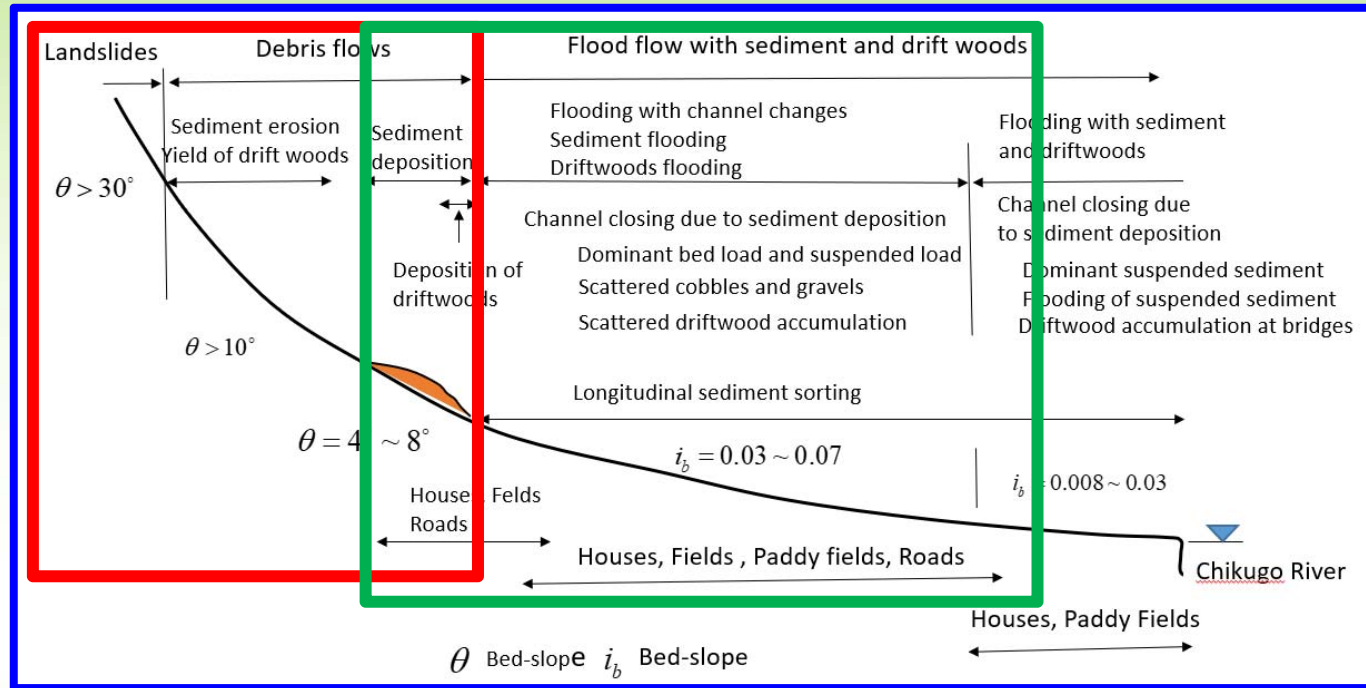
Before the flood

Immediately after the flood

Channel change in the middle reach of Akadani

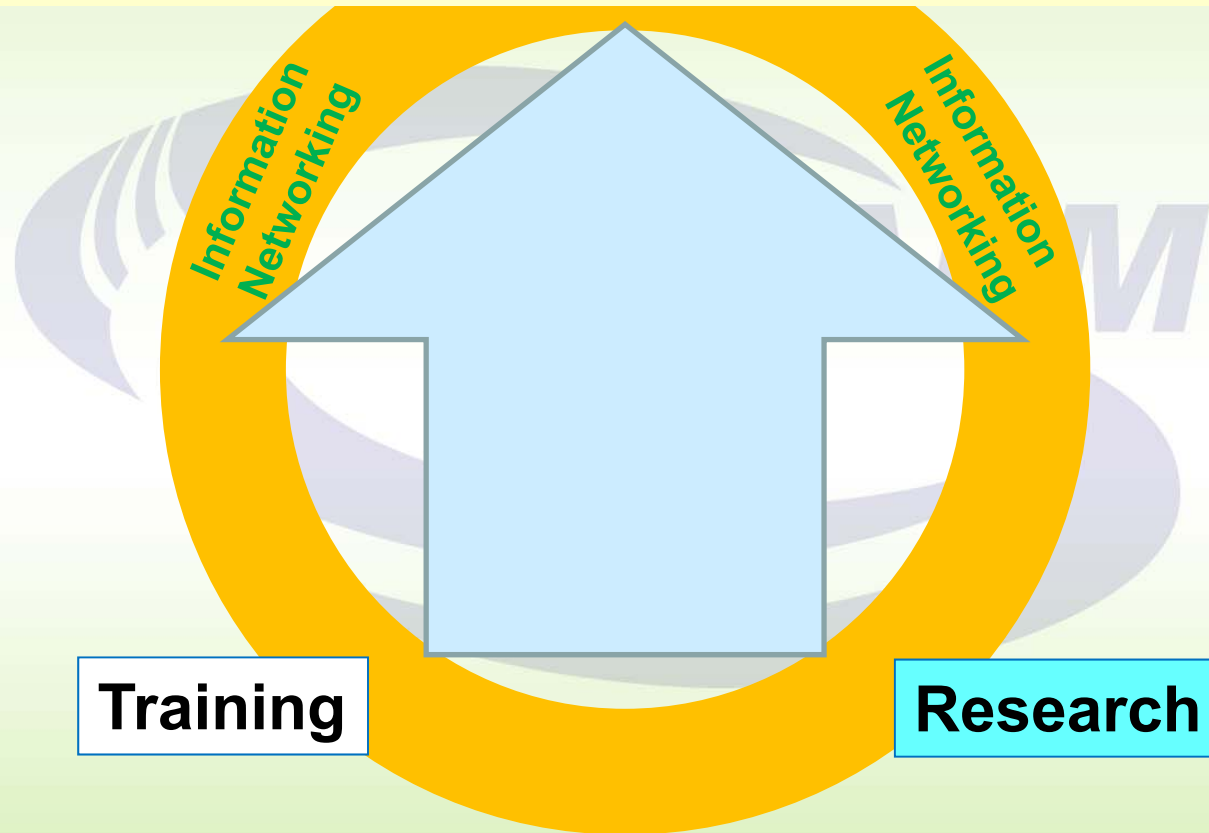
Debris flow deposition in the upstream of Akadani basin

Integrated Activity: Sediment Disaster Simulation in Northern Kyushu



Challenge to Localism

Delivering best available knowledge to local practices



Number of peer reviewed paper (from April to March)

FY2006	FY2007	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016	FY2017
5	6	11	4	12	16	9	20	18	22	44	20(30)

*FY2017: 20 by January 2018, (30) by March 2018)

Capacity Building

More than 1,500 individuals from 57 countries

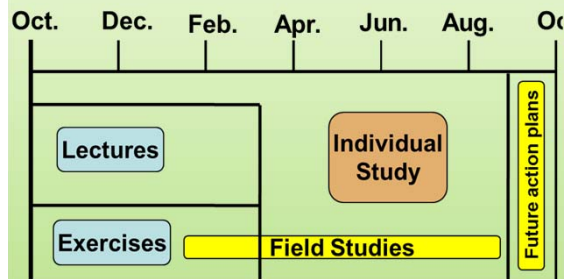
1. Master's degree course (1 year)

- In cooperate with the [National Graduate Institute for Policy Studies \(GRIPS\)](#)
- and [Japan International Cooperation Agency \(JICA\)](#)
- Since October 2007

2. Doctor's degree course (3 years):

- In cooperate with the [Graduate Research Institute for Policy Studies \(GRIPS\)](#)
- [ICHARM](#) has offered a program, "Disaster Management Ph.D. Program"
- Since October 2010

	Master's	Ph.D.
2007	10	
2008	7	
2009	12	
2010	12	1
2011	19	1
2012	12	2
2013	12	3
2014	13	-
2015	13	(2)
2016	8	(2)
2017	(14)	(1)
total	118	7



3. Short-term training Programs and Workshops (a few days to a month)

- In cooperation with [JICA](#), [UN/ISDR](#), [UNESCO](#) and the [University of Tokyo](#)
- ex. Hazard maps, IFAS and local preparedness (2004-2017, JICA), Tsunami (2008, ISDR), CC adaptation (2010, JICA), Pakistan Flood WSs (2011-12, 2015-17, UNESCO), Summer Program (2015-16, UoT)

4. Follow-up activities:

- ICHARM hold [seminars for former participants in its training courses](#) to follow up their subsequent activities and understand issues the face in their home counties
- Kuala Lumpur 2007, Guangzhou 2008, Manila 2009, Hanoi 2010, Bangkok 2012, Dhaka 2013, Kuala Lumpur 2014, Jakarta 2015, Tokyo 2016, Manila 2017, Yangon 2017

5. Workshops on IFAS and RRI model (a few days to a month):

- ICHARM holds [workshops and lectures on the principal hydrological models](#), the Integrated Flood Analysis System and the Rainfall-Runoff-Inundation model, during the training in Japan or overseas

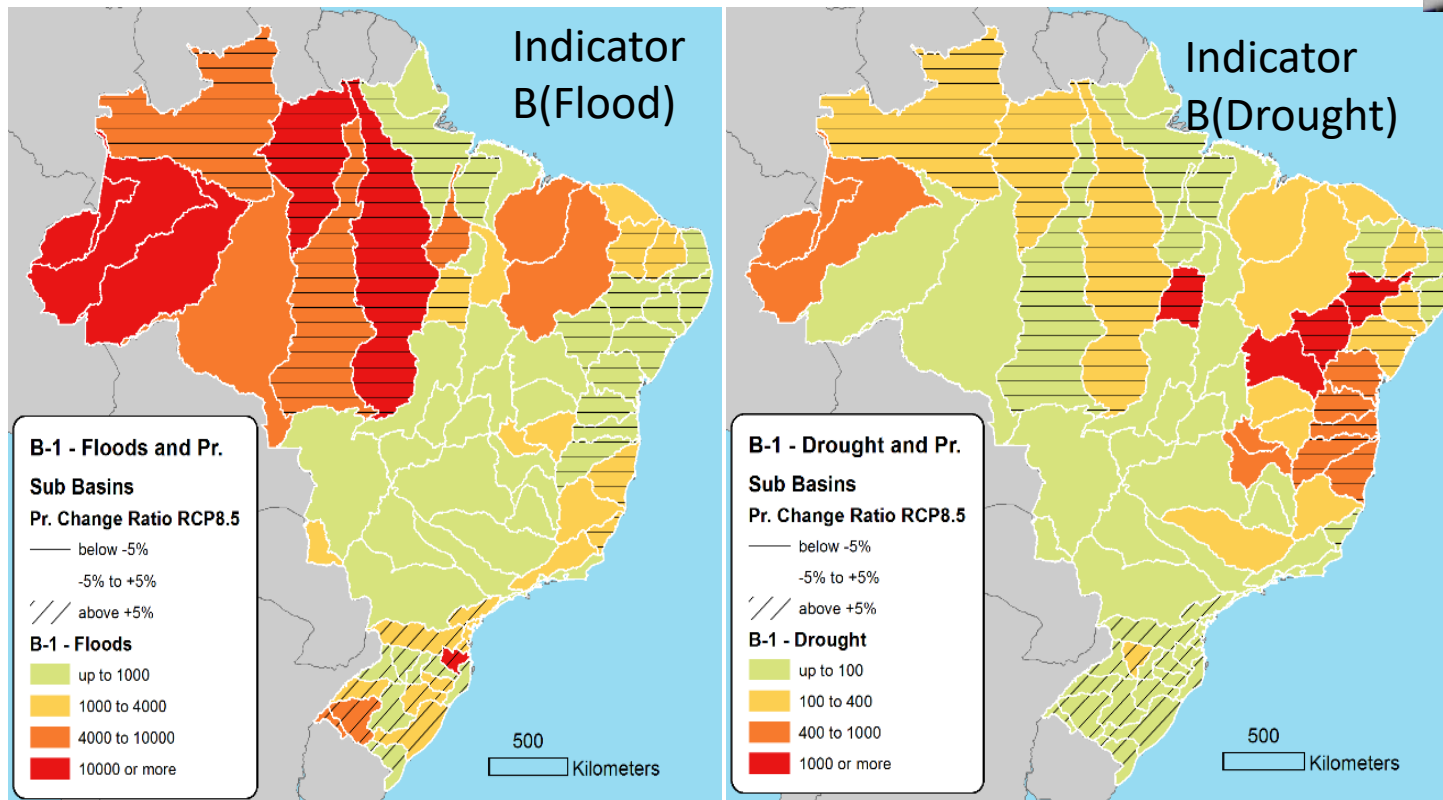
6. Internship for researchers and students from Japan and abroad

- Number: 2 (^09), 3(^11), 3(^12), 3(^13), 5(^14), 2(^15), 10(^16), 7(^17)

2016-2017 Master's Course

Mr. Mikosz Lucas, Brazil

- A Brazilian student was from the National Department of Civil Protection and Defense. While studying at ICHARM, he worked on research aiming to apply the seven Global Targets, defined in the Sendai Framework, to disaster management in Brazil, proposing how to use these targets for achieving local disaster risk reduction.



Relationship between SF indicator B(No. of affected people per 100,000 population) and expected change of basin average precipitation under RCP8.5 scenario

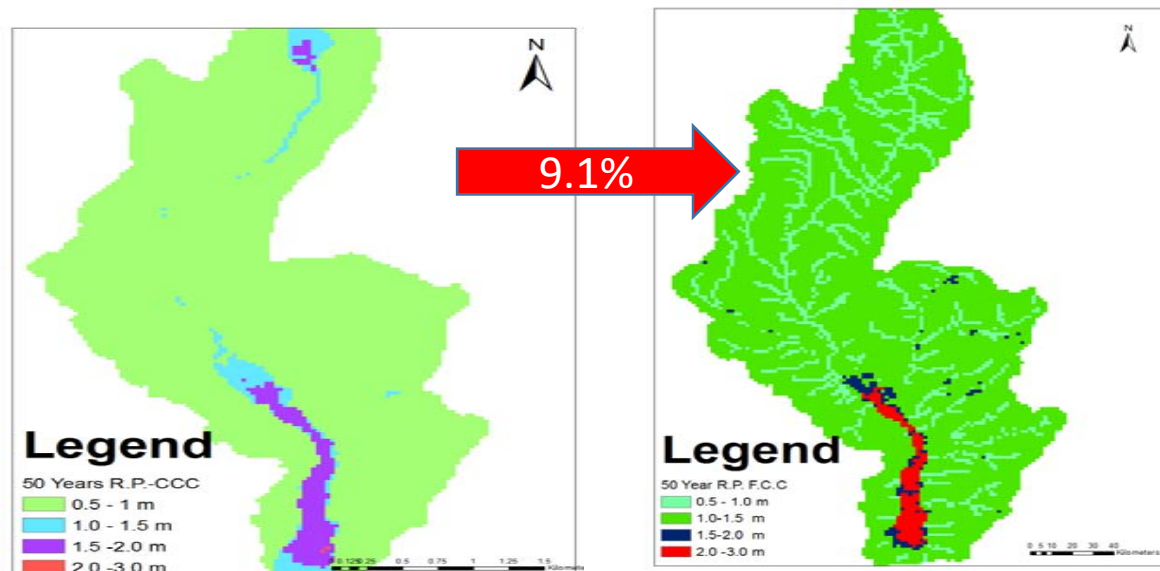
2016-2017 Master's Course

Mr. GAMA Samuel Joseph, Malawi

- Working at a national disaster management organization back home, he already had had basic knowledge and experience on socio-economic analysis and trans-boundary river management when he started the program. At GRIPS and ICHARM, he improved his socio-economic understanding, and began to learn a methodology for assessing climate change impact on floods.



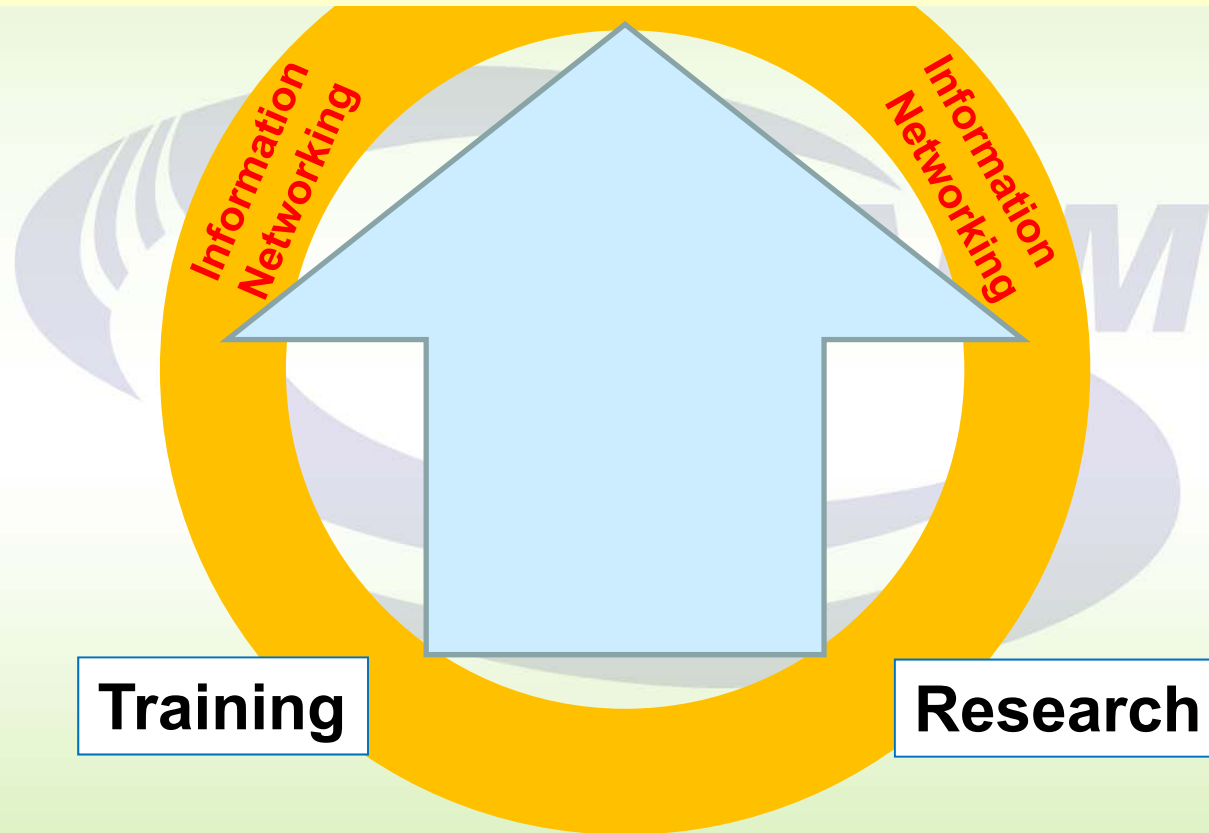
In response to his presentation, UNDP has provided financial support amounting to US\$ 16 million for my office to improve on the EWS through the “*Scaling-up the Use of Modernized Climate Information and Early Warning Systems Project (M-CLIMES)”* under the Global Climate Fund.



50 Years Return Period

Challenge to Localism

Delivering best available knowledge to local practices



International Symposium on Integrated Actions for Global Water and Environmental Sustainability -In line with the Commemoration of the 70th Anniversary of UNESCO, October 2015, Medan



Second UN Special Thematic Session on Water and Disasters, 2015, The UN Headquarters, New York



Asia Water Cycle Symposium (AWCS2016), March 2016, Tokyo



IFI Side Event at the UNESCO IHP IC on New Strategy for International Flood Initiative (IFI), June 2016, Paris

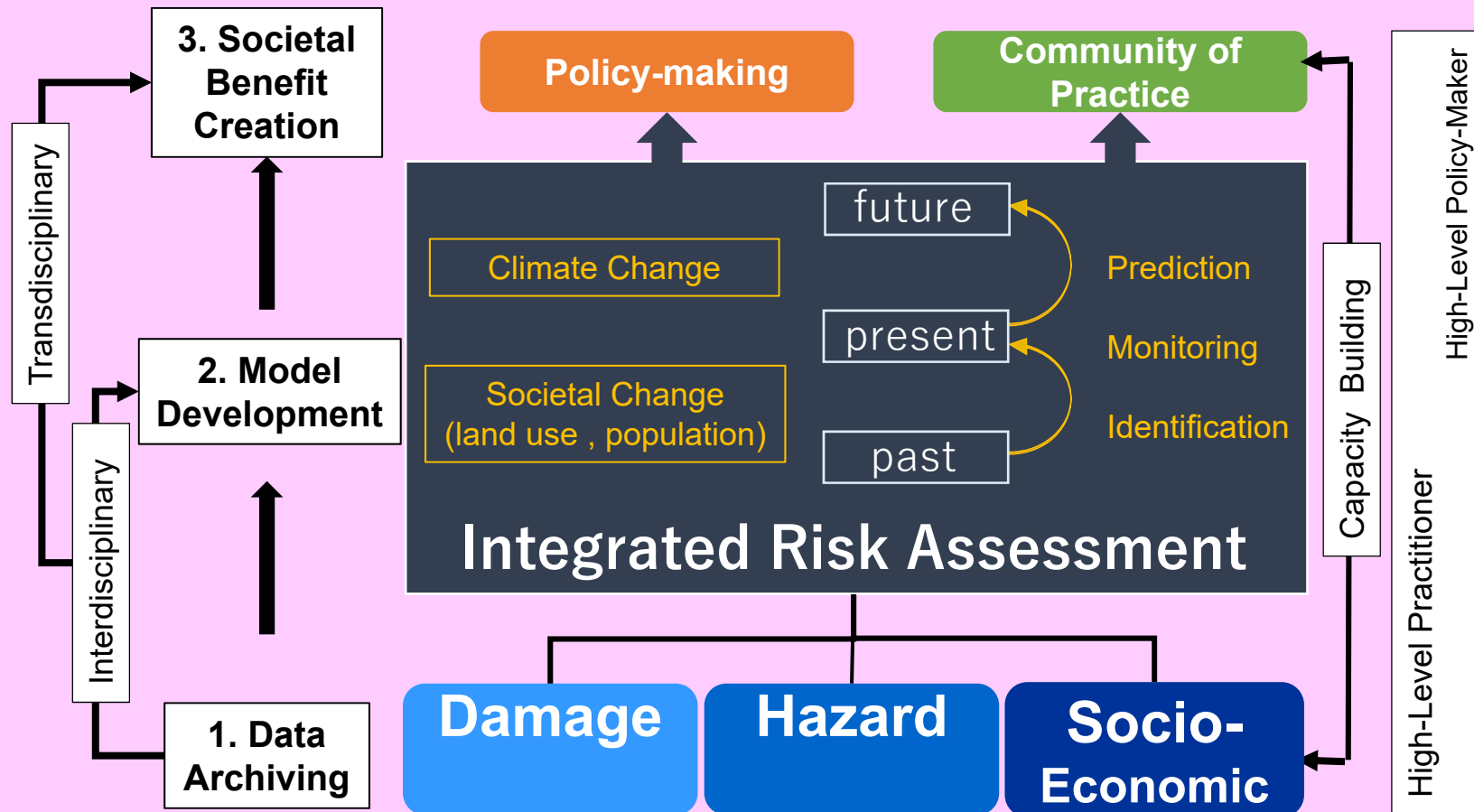


Third UN Special Thematic Session on Water and Disasters, 2017, The UN Headquarters, New York



ENGLISH 20 JUL 2017
(Part 2) Third Special Thematic session on Water and...

Platform on Water and Disasters (PWD)



International Cooperation

Activities in Asia-Pacific Region

- **Pakistan**

- **Platform on Water and Disasters**
- Activity: Meeting among related stakeholders in **April and December**, 2017
- Initial Target(s): **Indus River**

- **Myanmar**

- **Platform on Water and Disasters**
- Activity: Meeting among related stakeholders in **May and November**, 2017
- Initial Target(s): **Bago River & Sittaung River**

- **Philippines**

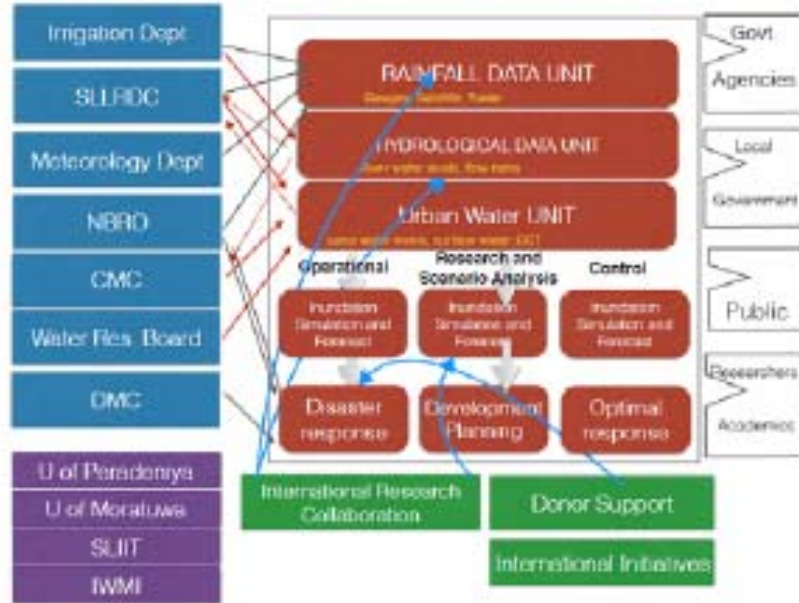
- **Platform on Water-related Disasters (PLATFORM)**
- Activity: Meeting among related stakeholders in **March and June**, 2017
- Initial Target(s): **Pampanga River & Davao River**

- **Sri Lanka**

- **Platform on Water and Disasters**
- Activity: Meeting among related stakeholders in **August**, 2017
- Initial Target(s): **Kalu River, Kelani River, Malvathu River**

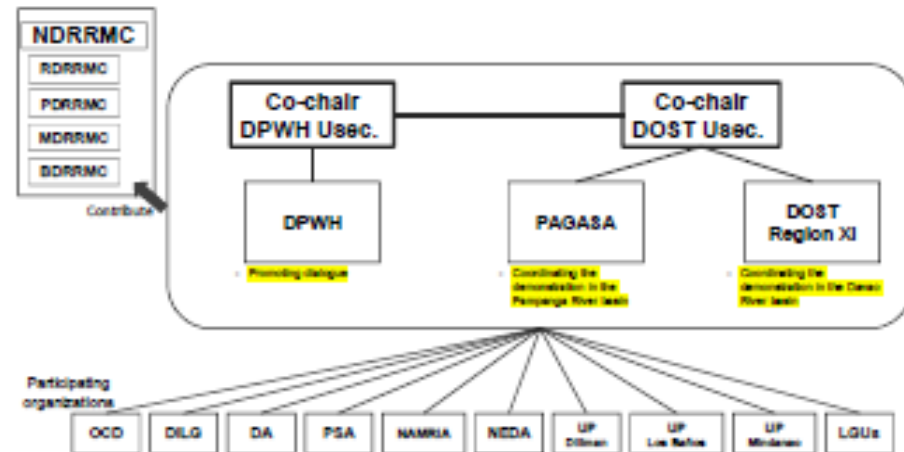
Sri Lanka

System Implementation



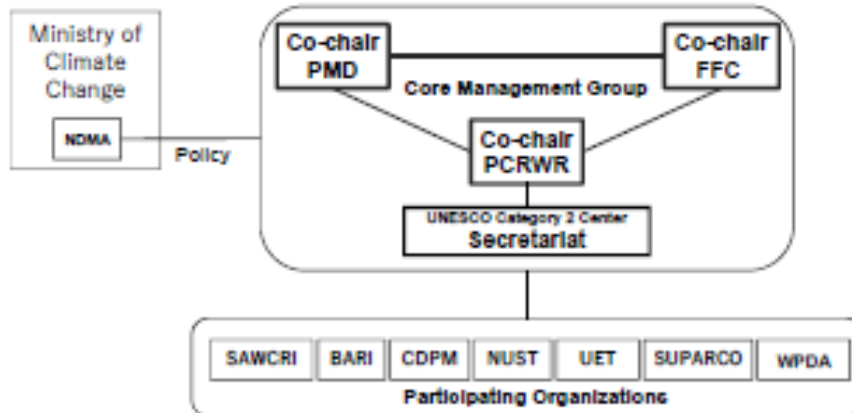
Philippines

Institutional Structure of the Platform on Water-related Disasters

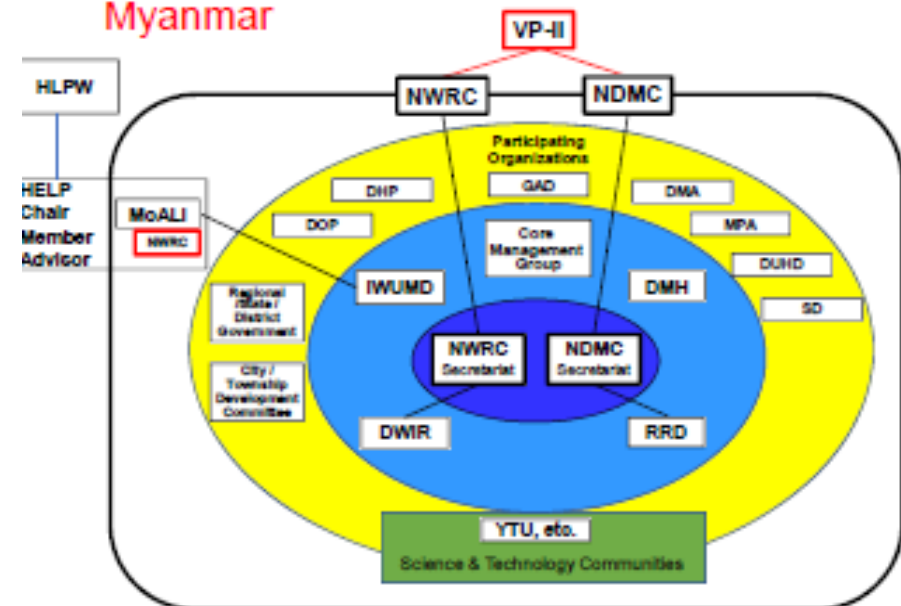


Pakistan

Institutional Structure of the Platform on Water and Disasters



Myanmar



Session at the 3rd Asia-Pacific Water Summit

Title: Water and disaster in the context of climate change

– From the mountain to the islands -

Time & Date: December 11, 2017

Co-Organizers: ICHARM, ICIMOD, SPC, HELP

Session Framework:

Part 1: Keynote Speeches by High-Level Leaders (3 leaders)

Part 2: Country Presentations (10 presenters from 7 countries)

Part 3: Panel Discussion (5 panelists)

→ **holistic, concerted and regionally collaborative approach
from the mountains to the islands**



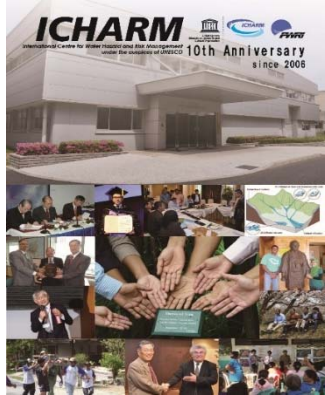
Keynote Speeches by H. E. Dr. Jose Ramos-Horta, Senior Minister of the Democratic Republic of Timor-Leste (left) and H.E. Keiichi Ishi, Minister of Land Infrastructure, Transport and Tourism of Japan (right)



Prof. Koike, Director, ICHARM, addresses a speech at the 31 Leaders Statement of the Plenary

Public Relations

ICHARM
10th
anniversary
publication



ICHARM Open day

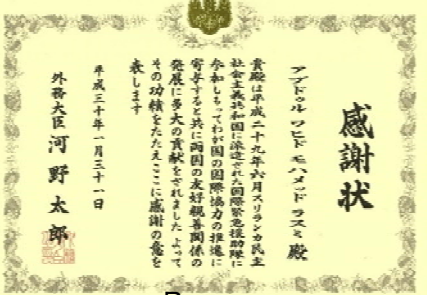
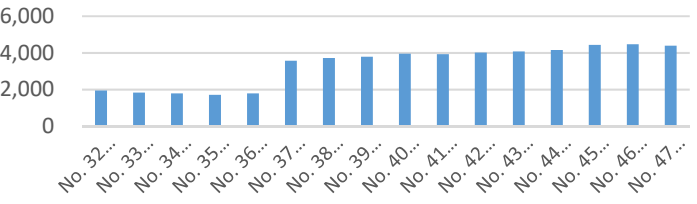
Awards

- Dr. Ohara, et.al.** Institute of Social Safety Science 2015 Best Paper Award
- Dr. Nagumo, et.al.** Institute of Social Safety Science 2015 Best Presentation Award
- Dr. Yorozuya, et.al.** Hokkaido Regional Development Bureau Director's Award
- Dr. Yorozuya, et.al.** 2016 Hydrosience and Hydraulic Engineering Paper Encouragement Award
- Dr. Kikumori** Common MP Contribution Award
- ICHARM** The 19th Infrastructure Technology Development Award
- Dr. Mohamed Rasmy Abdul Wahid** Letter of appreciation from the President of JICA and the Minister for Foreign Affairs

Newsletters



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Rasmy

ICHARM R&D Seminars



Dr. Srikantha Herath at 58th ICHARM R&D Seminar



Thank you very much for your attention!