A Pre-session for 2021 IRDR Conference

Promoting Coherence among Disaster Risk Reduction, Climate Change Adaptation, and Sustainable Development by Establishing an "Online Synthesis System (OSS)" and Fostering "Facilitators" using OSS:

Case in Myanmar for flood disaster risk and poverty reduction

KAWASAKI Akiyuki
A member of IRDR, SCJ
Center for Global Commons, Institute for Future Initiatives,
The University of Tokyo

東京大学
THE UNIVERSITY OF TOKYO

2 facilitators and OSS for flood DRR in Myanmar

Governance | Flood forecast and response | Urban plan

Local-based **facilitator**@YTU
- Local language
- Expertise water DRR
- Understand local needs

International **facilitator**@UTokyo
- Expertise data and technology
- Connect to intl. experts
- Propose solutions

Problem/needs

Local knowledge

Data/information

Solutions

Governance

Collaboration

Social implementation

Online Synthesis System (OSS)

DIAS Data Integration & Analysis System

Data and model synthesis for flood DRR and poverty reduction

Fund agency

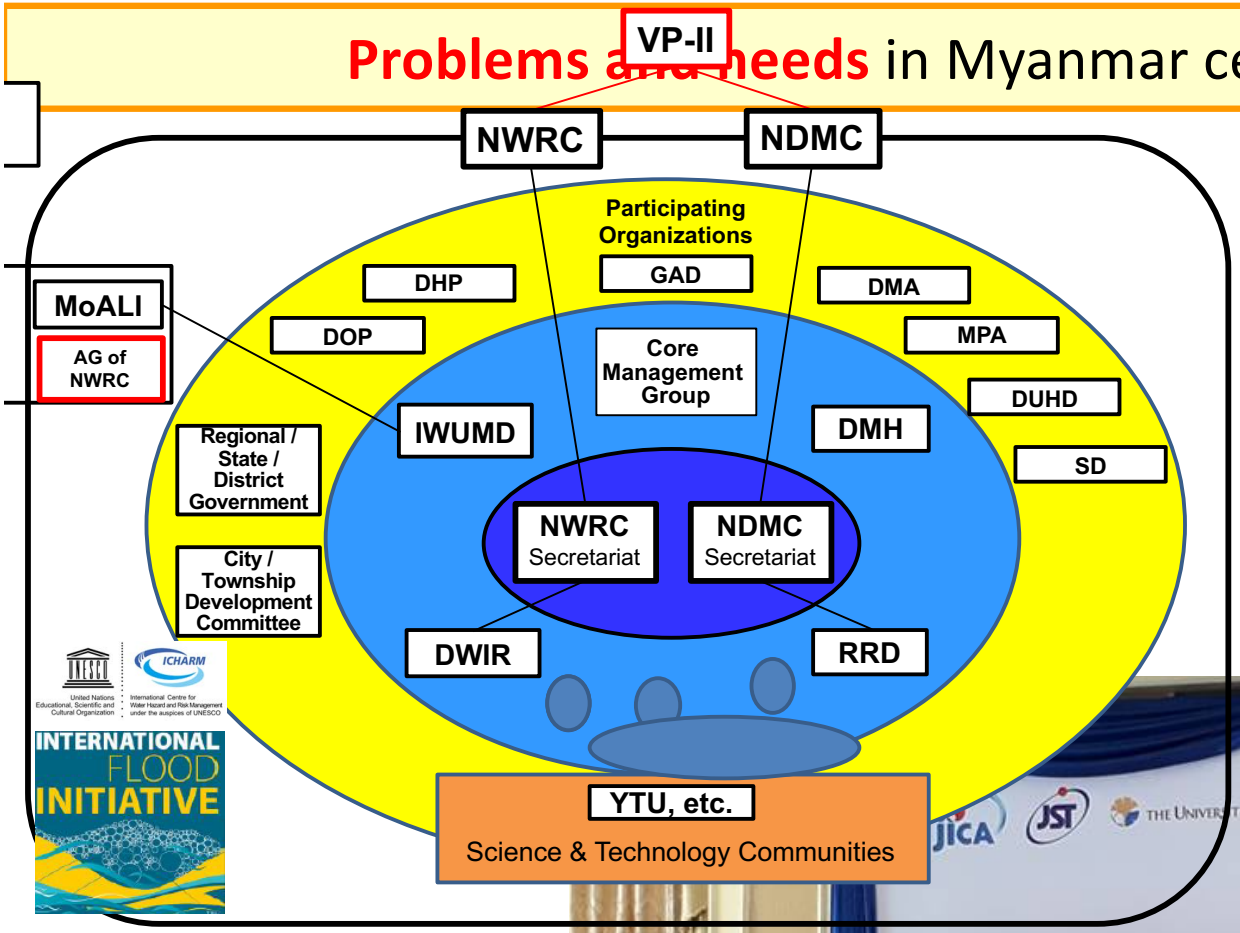
JST | JICA

Technical advice

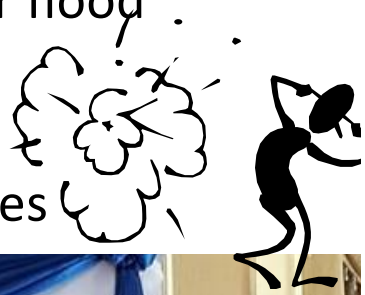
UNESCO United Nations Educational, Scientific and Cultural Organization | ICHARM International Centre for Water Hazard and Risk Management under the auspices of UNESCO

Academic journal | Survey report | Statistics | Scientific data | Knowledge hub

Problems and needs in Myanmar central government



- Bureaucratic administration for flood DRR
  - Uncoordinated response
  - No informationn sharing
- Data scarcity for flood forecast and
- early warning
- Limited resources



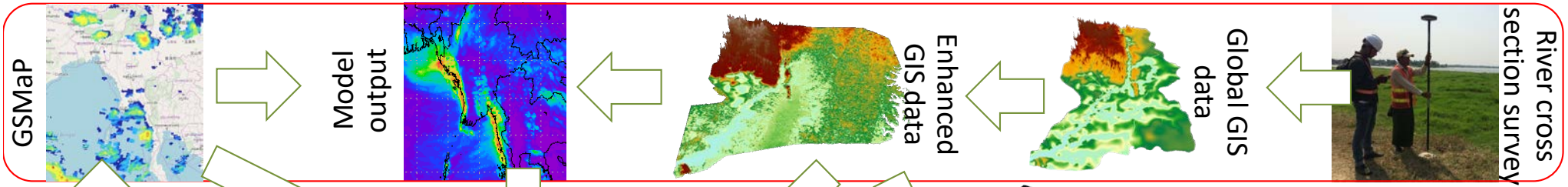
【Proposal of a new governance system】

The 4 departments works together through **data sharing** and **integration** from each department.

It is rare for the **4 DGs to meet in one place**, and the realization of the high-level meeting was widely reported in the local media.

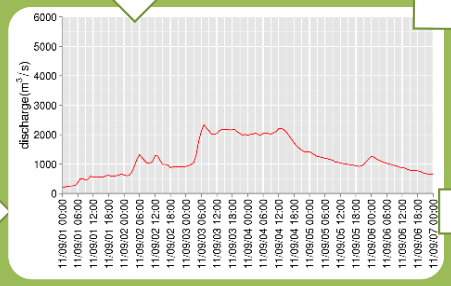
Solution for a data scarce region:

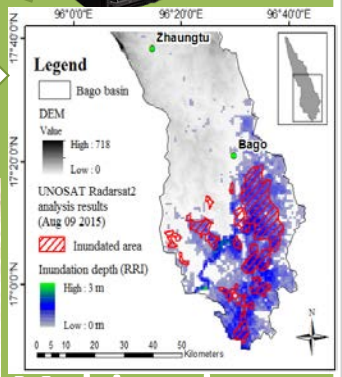
Near real-time flood forecast system was developed by integrating satellite data, model output, and limited in-situ and local data on **OSS** (DIAS: Data and Information Analysis System)



Installation of meteoro-hydro observation stations

Telemetry system





Melting down vertical segmented administrative system via data integration!

DIAS
Data Integration & Analysis System

Target disasters

River flood and **high-tide**

Study area

Bago River basin

Implemented as an ODA scheme (SATREPS project) supported by JICA and JST

Data integration and system development for promoting collaboration

AWS data
Rainfall | Pressure | Wind | Relative Humidity | Temperature
~10 mins
SATREPS,DMH, (IWUMD, DHP)

AHS data
Water-level | Tide
~10 mins
SATREPS,DMH

Satellite products
GSMaP NOW
Rainfall

Dam operation
Outflow | Capacity | Water level
(Future integration)

DIAS Data Integration & Analysis System

High resolution DEM
SATREPS

Cross-section

SATREPS, DWIR

Drainage structure
IWUMD

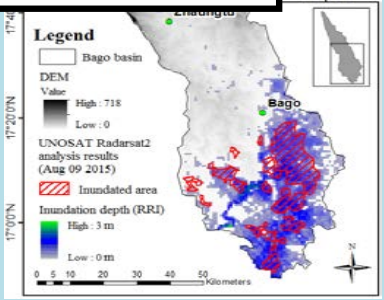
DIAS Data Integration & Analysis System

Real Time System
BIAS correction
Rainfall
~1 mins
Geoprocessing forcing
Real Time Processes
RRI Model
Discharge | Water level | Inundation
~5 mins

Flood forecasting is possible by integrating data from vertically divided departments in the system.

User needs


IWUMD, DWIR, DMH, DDM

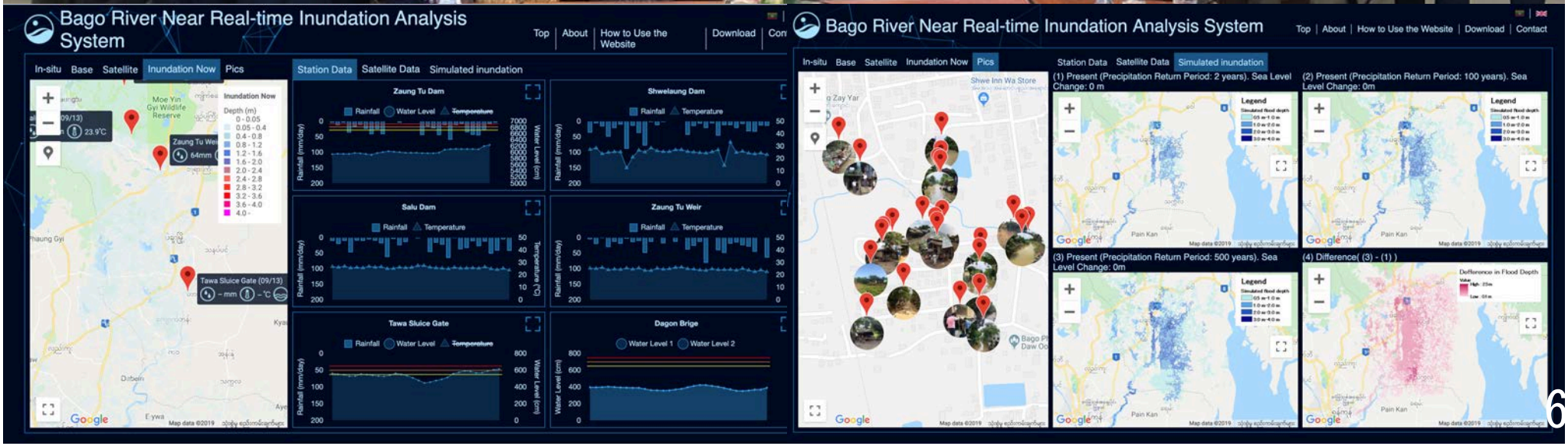
Output for stakeholders
~15-20 mins delay


Improved efficiency and sophistication of operations in each department
Routine operation
IWUMD, DWIR, DMH, DHPI
- Remote monitoring /reducing site-visit loads
- Understand real situation
- Risk

Emergency case *DMH*
- Issuing warning

Emergency response
DDM (EOC)

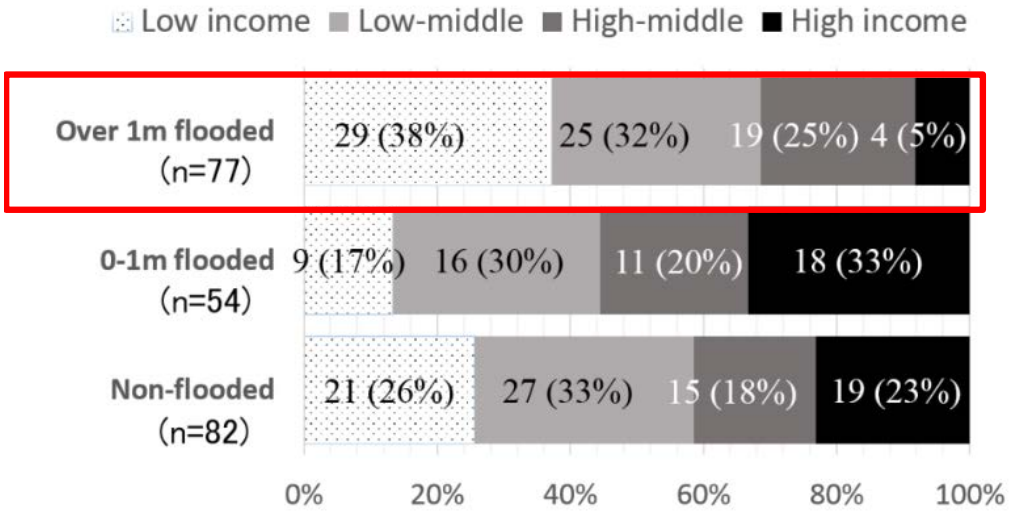
Test operation by Myanmar Government was started in July 2019



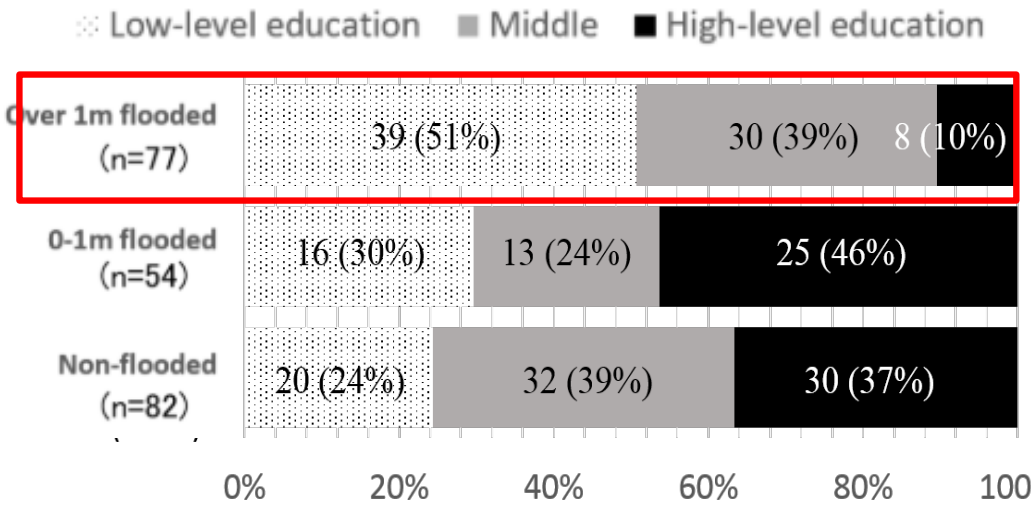
Local problem: flood and poverty

The income and education levels of residents living in severely-flooded areas (flood depth more than 1m) are significantly lower than those living in other places (flood depth less than 1m or none)

Flood depth⇔Income χ^2=20.29, df=4, P<0.01



Flood depth⇔Education χ^2=25.32, df=4, P<0.01



Relationship between flood depth and income/education during 2011 flood at Bago, Myanmar (N=213) (Kawamura and Kawasaki, 2017)

Possibility of improving residents' income or education levels by completely or partly reducing the flood depth at flood-prone areas (→Social benefit by countermeasures)

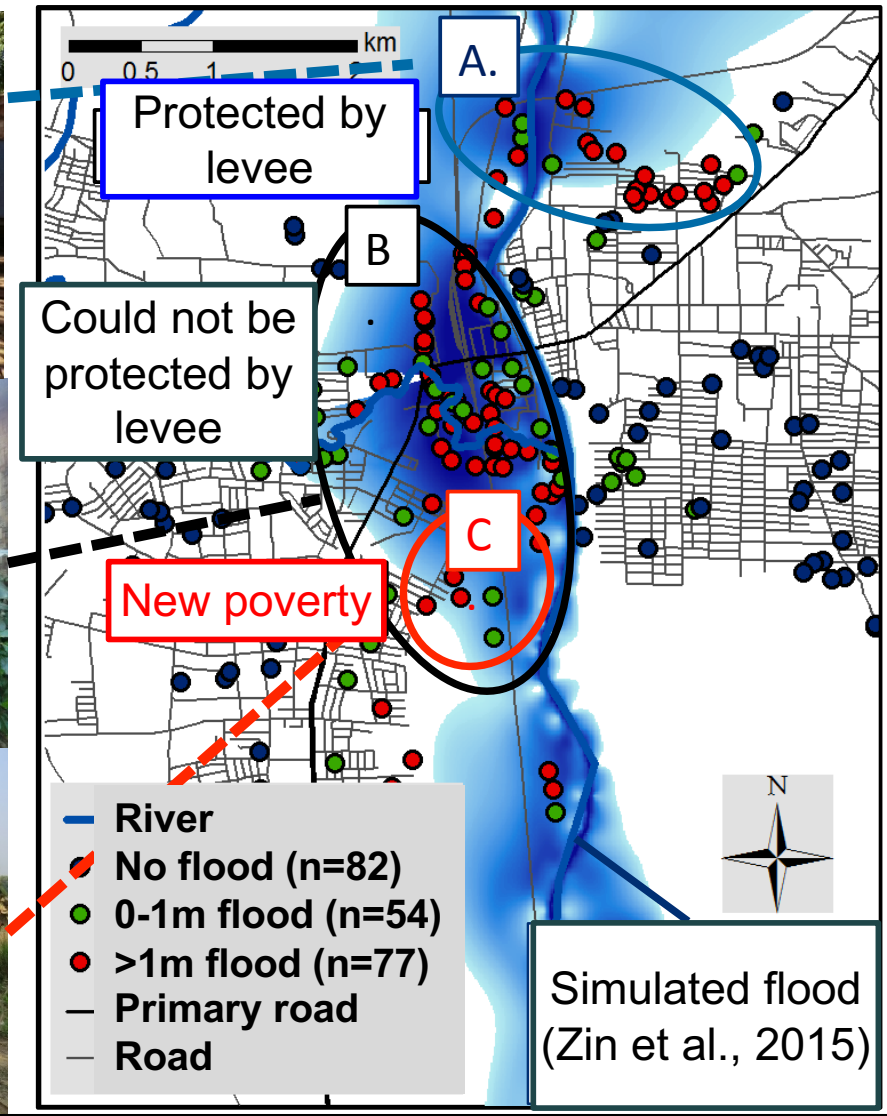
In less developing world with various social issues and limited resources, effective DRR investment that not only contributes to DRR but also to social development is needed.

Solution: flood DRR plan contributing to poverty alleviation

Proposal of city development and DRR plan, that considers flood simulation which shows the effect of levee construction, residential distribution of the poor, and their community characteristics

Long period of residence, and strong community developed

Short period of residence



	Levee construction	Emergency relief	Building reinforcement	Relocation	Residence restriction
A	◎	○	△	×	△
B	△	◎	◎	×	○
C	△	△	×	◎	◎

Social implementation: local government support using OSS


GAD


Bago Reginal Gov.

Bago Chief Minister

Stakeholders Workshop


DDM