



NATIONAL REPORT ON THE PLATFORM ACTIVITY

MYANMAR

Participants

Professor Khin Than Yu, Pro Rector (Retd.), YTU

Dr. Zaw Lwin Tun, Deputy Director General (IWUMD)

Mr. Aung Myo Khaing, Director (DWIR)

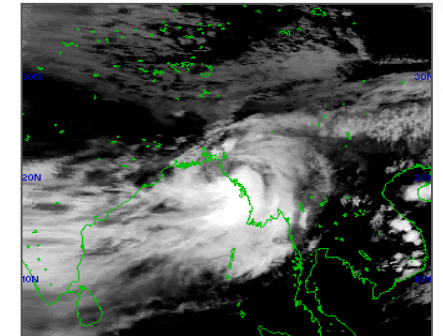
Ms. Phyu Lai Lai Htun, Director (DDM)

Ms. Thidar Myint, Assistant Director (DMH)

Background Information

Myanmar is one of the disaster prone countries

- Riverine Flood
- Flash Flood
- Drought
- Landslide
- Storm surge
- Earthquake
- Tsunami



- In 2010, Government changed political system
- Many international organizations support Myanmar
- Economic development, disaster risk reduction, ---,etc
- Big changes occurred in the water related sectors



Establishment of National Platform

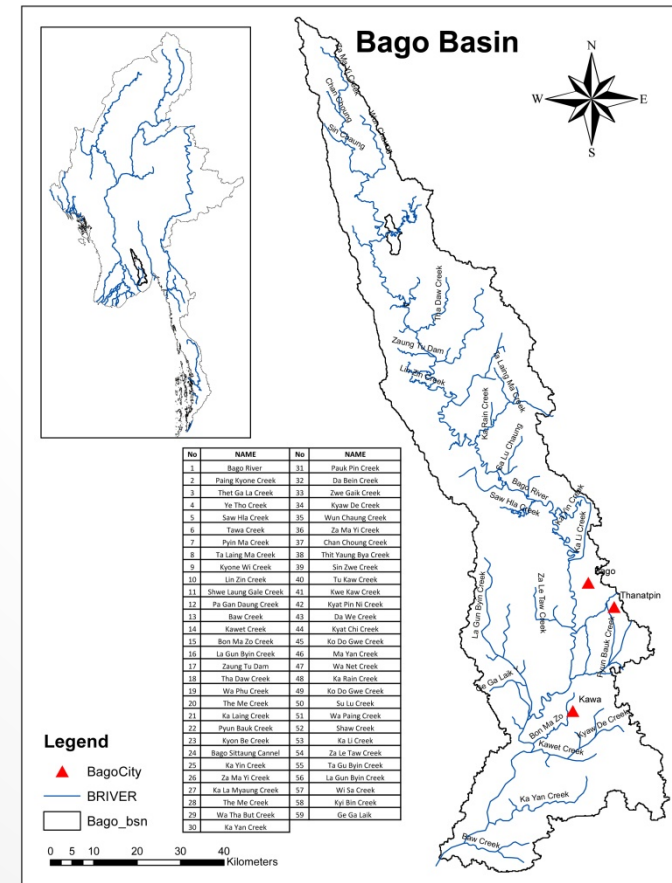
- ❑ National platform on water and disasters has to be established for initiation and implementation of actions to reduce water-related disaster risks and achieve sustainable development.
- ❑ This platform is supported by the three functions of IFI under the collaboration of the international community.
- ❑ JICA SATREPS project, “Development of a Comprehensive Disaster Resilience System and Collaboration Platform in Myanmar” was initiated with 4 main lined agencies, IWUMD, DWIR, DMH, DDM together with YTU and University of Tokyo.
- ❑ To enhance the effectiveness of water-related disaster risk reduction activities in Myanmar, high-level consultation meeting was jointly organized by University of Tokyo, ICHARM, and 4 main lined agencies, IWUMD, DWIR, DMH, DDM together with YTU in May 2017, since then, National Platform was established for water resilience and disaster risk reduction in Myanmar.

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IWUMD, DWIR, DHPI and DMH have been cooperating with **Tokyo University (TU)** and **Yangon Technological University (YTU)** under the **SATREPS Project**

Five Auto Weather Stations (AWSs) and Three Auto Water Level Stations (AWLs) were established in Bago River Basin for Hydro-meteorological data monitoring and Flood Forecasting for Bago River Flood Disaster Risk Reduction activities with **DDM**

- (1) Zaung Tu Weir (AWS) (IWUMD)
- (2) Zaung Tu Dam (AWS) (DHPI)
- (3) Salu Dam (AWS) (IWUMD)
- (4) Shwe Laung Dam (AWS) (IWUMD)
- (5) Tarwa Sluice Gate (AWS) (IWUMD)
- (6) Tarwa Sluice Gate (AWL) (IWUMD)
- (7) Zaung Tu Dam (AWL) (DHPI)
- (8) Dagon Bridge (AWL) (DWIR)

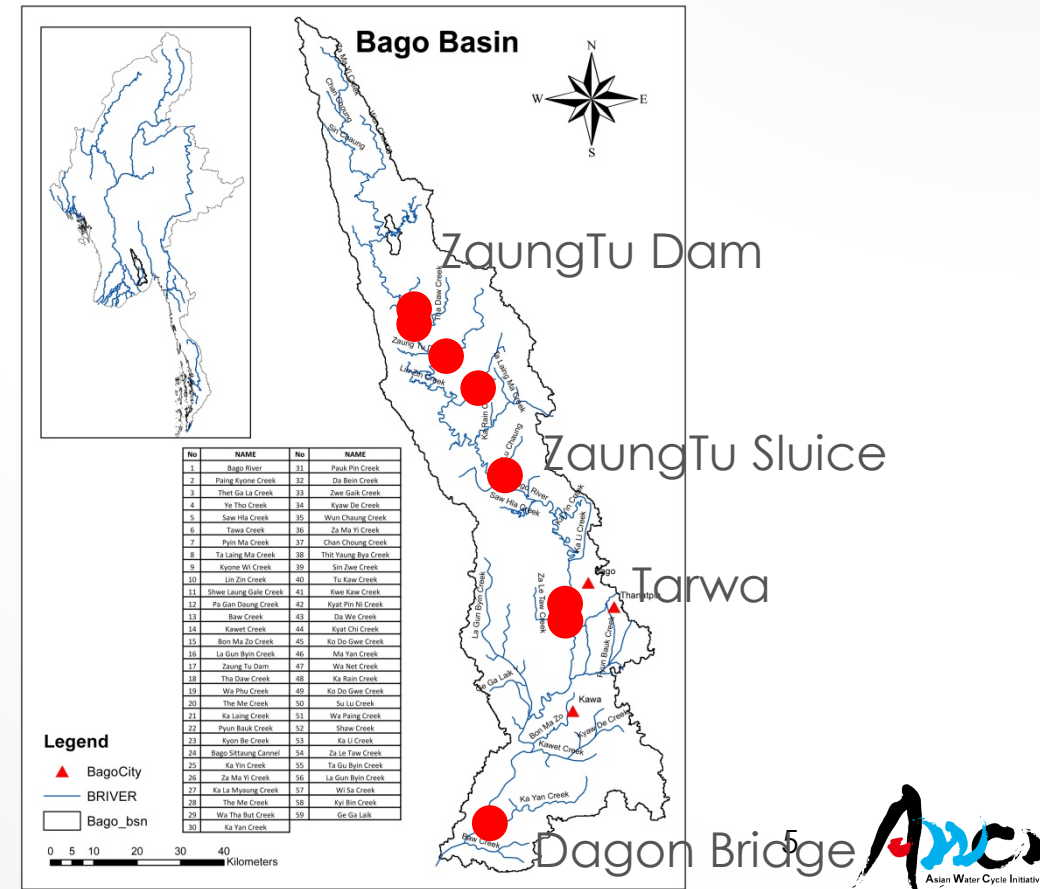


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BAGO RIVER NEAR REAL-TIME FLOOD INUNDATION ANALYSIS SYSTEM

Group: Water-related Disaster Group
 Leaders: Prof. Win Win Zin, Professor, YTU
 Prof. Akiyuki Kawasaki, Project Professor, UTokyo
 Sub-leader: Dr. Seemanta Sharma Bhagabati, Project Researcher, UTokyo

01-Oct 2019 Seminar on Commencement of Activities of consortium

Flood Inundation Analysis System in Bago River

- Near-real time components of system
- 1. In-situ Telemetry Observation
- 2. Flood Inundation Simulation
- 3. NRT system website: Visualization

Goal: Development of near real-time flood forecast system

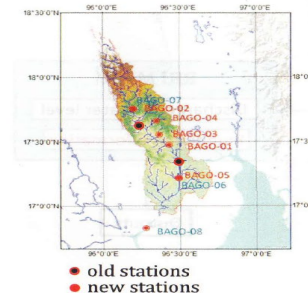
By **integrating** satellite data, model output, and limited in-situ and local data in a **data scarce region**, the system is under development on **DIAS platform** for supporting Myanmar governments

Being implemented as an Overseas Development Assistance by the Government of Japan

BAGO River NRT System In-situ Telemetry Observation

Automatic collection of near-real time data is essential for running the NRT flood inundation simulation

Established through proactive collaboration with YTU and local stakeholders (IWUMD, DHP, DWIR, DMH)



Station Code	Station Name	Maintenance
BAGO-01	ZaungTuWeir	IWUMD
BAGO-02	ZaungTu Dam	DHP
BAGO-03	Salu Dam	IWUMD
BAGO-04	Shwe Laung Dam	IWUMD
BAGO-05	Tawa Sluicgate	IWUMD
BAGO-06	Tawa Sluicgate WL	IWUMD
BAGO-07	ZaungTu Dam WL	DHP
BAGO-08	Dagon Bridge WL	DWIR

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BAGO River NRT System In-situ Telemetry Operation and Maintenance

Completion of installing equipment for all the stations this February 2019

→ Focus is shifted towards operation and maintenance

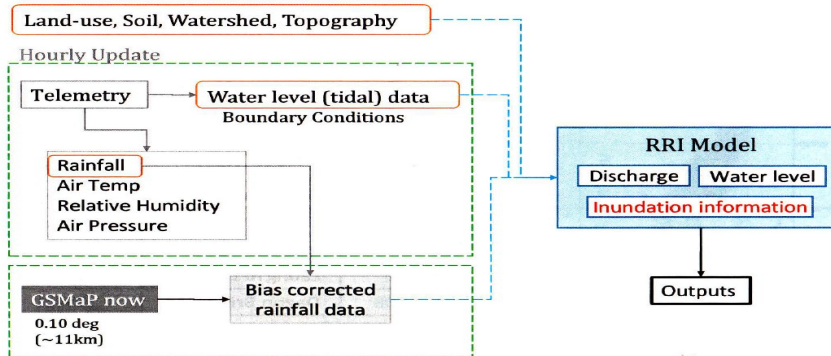
→ Continuous operation of the equipment is necessary to update near-real time database of in-situ observation in Bago River

Station Code	Station Name	Maintenance	Installation
BAGO-01	ZaungTuWeir	IWUMD	Mar 2016
BAGO-02	ZaungTu Dam	DHP	Apr 2017
BAGO-03	Salu Dam	IWUMD	Apr 2017
BAGO-04	Shwe Laung Dam	IWUMD	Apr 2017
BAGO-05	Tawa Sluicgate	IWUMD	Feb 2018
BAGO-06	Tawa Sluicgate WL	IWUMD	May 2017
BAGO-07	ZaungTu Dam WL	DHP	Feb 2019
BAGO-08	Dagon Bridge WL	DWIR	Jan 2019



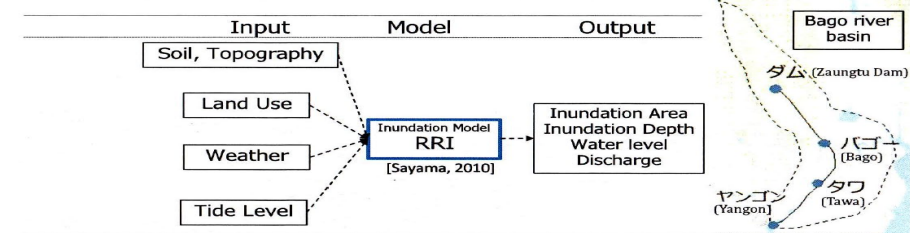
BAGO River NRT System Flood Inundation Simulation for NRT application Process

Legend: satellite data
gauge data



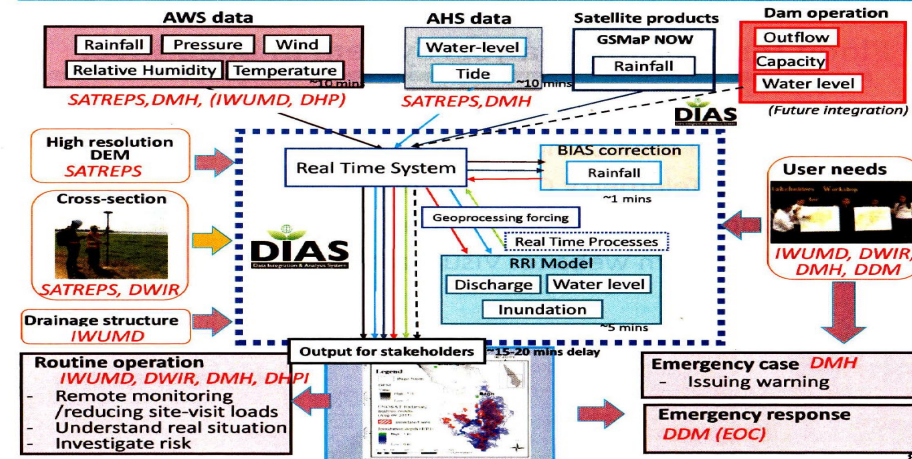
BAGO River NRT System Flood Inundation Simulation: Considering Tidal effects

Model Integration Usage – Yonehara, 2018 UTokyo (Y18)

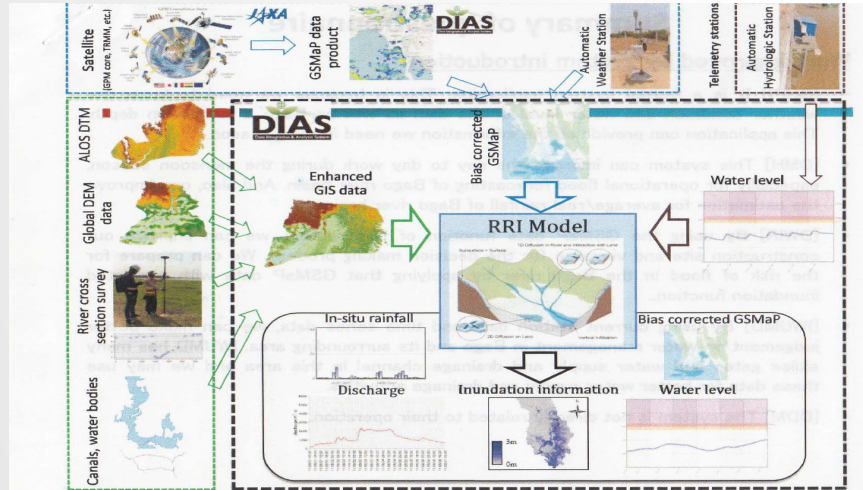


- ❑ Collect meteorological and hydrological data from 8 AWS and AHS installed throughout the Bago river basin
- ❑ RRI model is applied to simulate inundation in low-lying area
- ❑ Utilize tide level data as boundary condition of estuary

Near real-time flood forecast system for the Bago River



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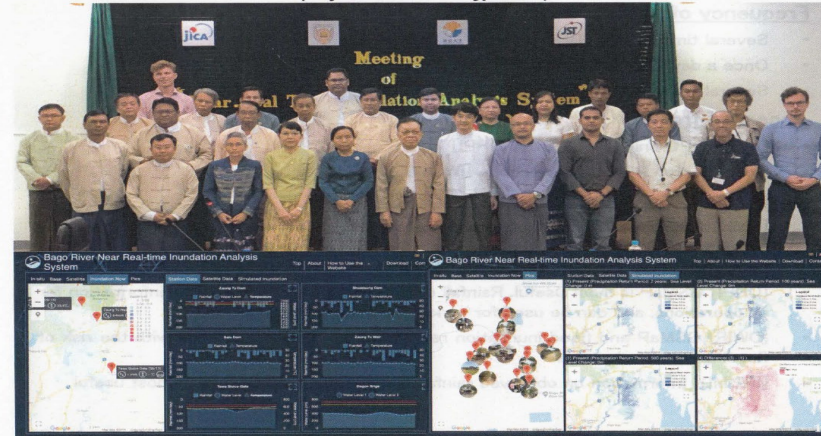
Questionnaire survey was conducted in the following departments

1. DWIR
2. DMH
3. IWUMD
4. DDM
5. DHP1

Period: July 10th to September 10th 2019



Bago NRT system was introduced to the stakeholders (myanmar.diasjp.net) 09-July-2019



東京大学 YTU DIAS SATREPS JICA JST

Bago Near Real-Time Inundation Analysis System

Feedback form:
This questionnaire form is prepared to collect the feedback from the stakeholders about the performance of the System that was opened to the stakeholders from 09 July 2019 for test operation. It can be accessed from - <http://myanmar.diasjp.net>
This questionnaire survey is conducted by Yonsei Technological University (YTU) and University of Tokyo (UTokyo) under the JICA (Japan International Cooperation Agency) SATREPS project.

Based on your feedback, we will improve and finalize the system development. Please read the following questions carefully and select one option that best explains your answer. And then, please return this form to SATREPS Project Office at YTU via email - diasjpoffice@gmail.com by Tuesday 10th September 2019.

Please fill this sheet by a single user. This means multiple replies from each Department is welcome (e.g., from Nay Pyi Taw office, Bago office, and on-site users). Your direct and concrete feedback / suggestions are really appreciated. Thank you for your time and kind cooperation.

Q1. How often did you use the system in this rainy season?
 Some times a day Once a day Some times a week Once a week Never
 If your answer is "Some times a day", please specify an approximate number: _____ times per day

Q2. Do you find following functions of the system useful?

Functions	Strongly useful	Slightly useful	Neutral	Slightly not useful	Strongly not useful
a. In-situ Current station data (Visualized with icons on map)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Real-time geographic data of Bago River basin	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Weather GSMaP data	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Simulated Inundation information	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Photo Pictures taken by group members during site inspections and surveys	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Station data: Time-series data viewer of all the stations in upper stream	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Weather forecast visualization	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. Simulated inundation: Inundation maps for different return periods and tide levels	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q7. How has this system impacted/improved your day-to-day office and on-site work? Please provide detailed answers.
 (For example: By using the _____ function of this system, this task/decision making process(es) was(were) improved because _____)

It is a fruitful system application for me. This is because I need to know weather condition and water level of my dams as well as bago's inundation depths. This application can provide all the information we need in rainy season.

Q8. Which function(s) of the system would you like to improve? Please share your idea for improvement.

In-situ - Sometimes I don't check the data.
 Inundation map - I don't check about anything on my devices. (It may be my misunderstanding to use app).
 Simulated inundation - Sometimes it showed flood areas that impossible in reality especially for Bago.

Q9. General/overall comments

It is a useful system application for whom have responsible like dams to control infrastructure, which may impact to local community if their operation and decision making is malfunction.

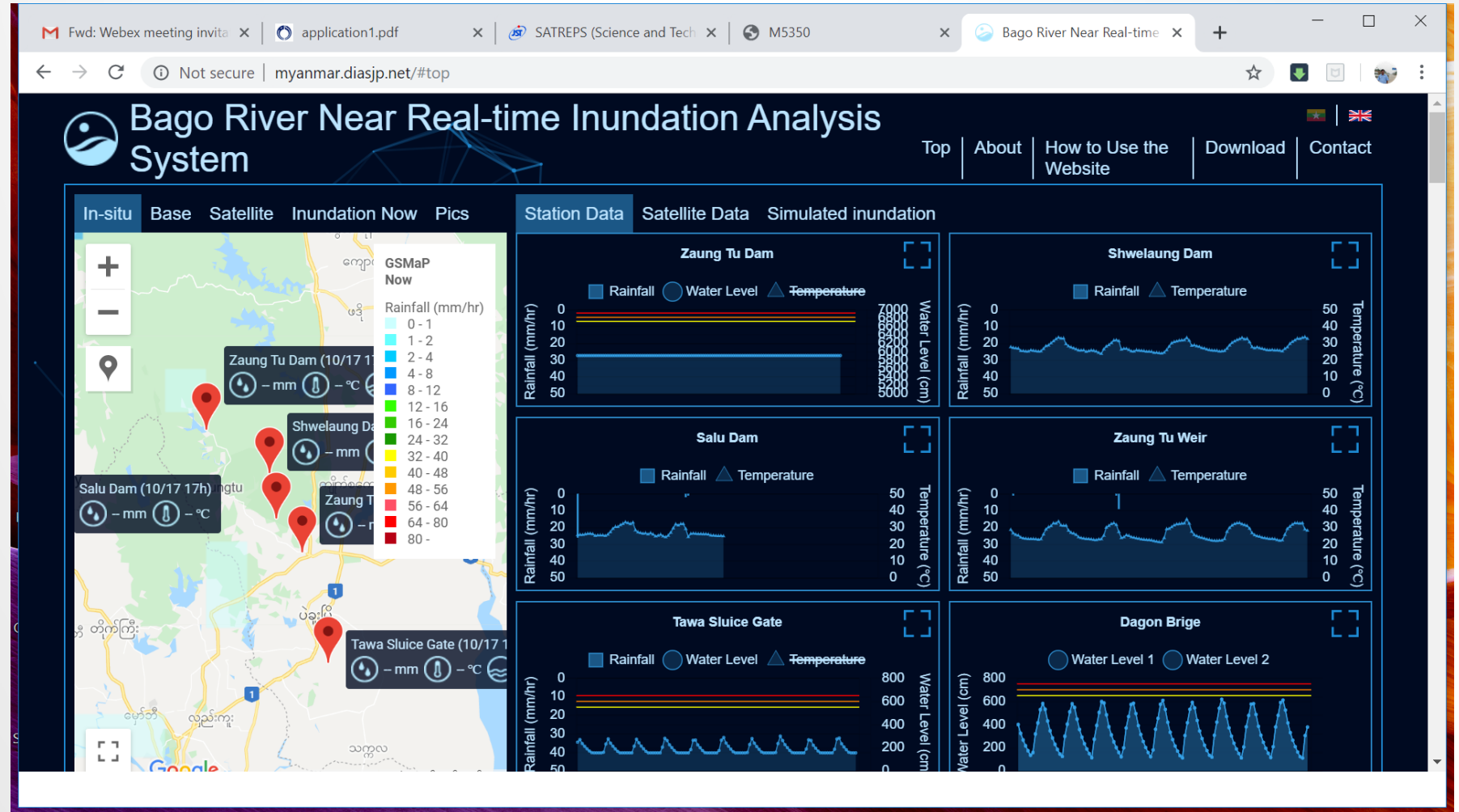
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Observed Hydro-meteorological data are collected and transmitted with Telemetry System

Near Real-time hydro-met data are utilized for Inundation Analyses

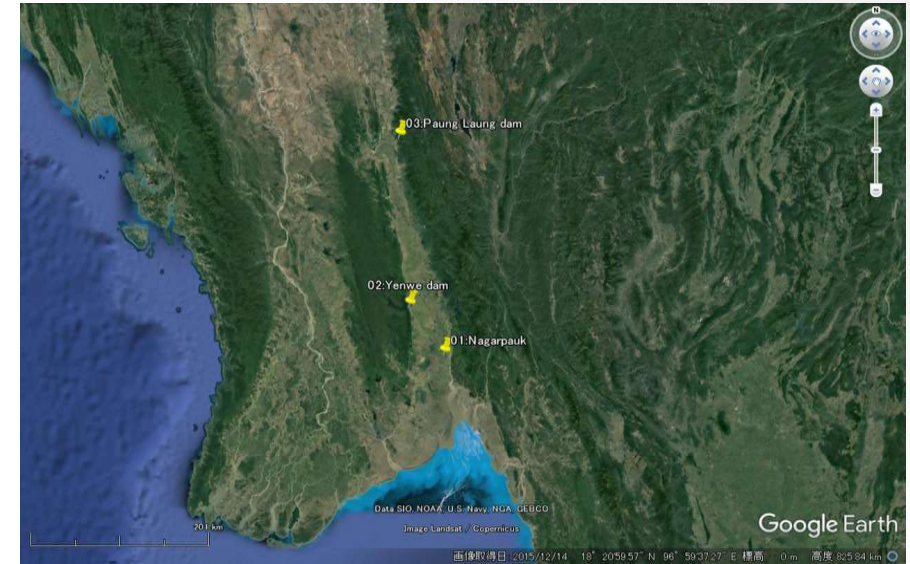
Near Real-time Inundation Analysis System for Bago River Monitoring and Flood Forecasting System was developed (SATREPS Project)

The system was launched as an outcome of the JICA's SATREPS Project on the website of "myanmar.diasjp.net"



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- IWUMD's collaboration with ICHARM in observation of Rainfall Data.
 - Three Auto Rain-gauge Stations were established in the Sittaung River Basin
 - Paung Laung Dam (Upstream of Sittaung River Basin)
 - Yenwe Dam (Mid-stream)
 - Nagarpauk Sluice (Downstream)
- Real-time rainfall data are transmitted from those stations which is linked to the DIAS platform.



Paung Laung dam



Yenwe dam

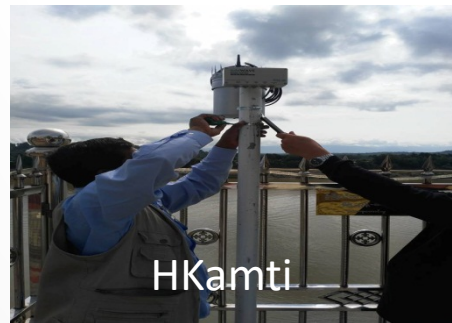
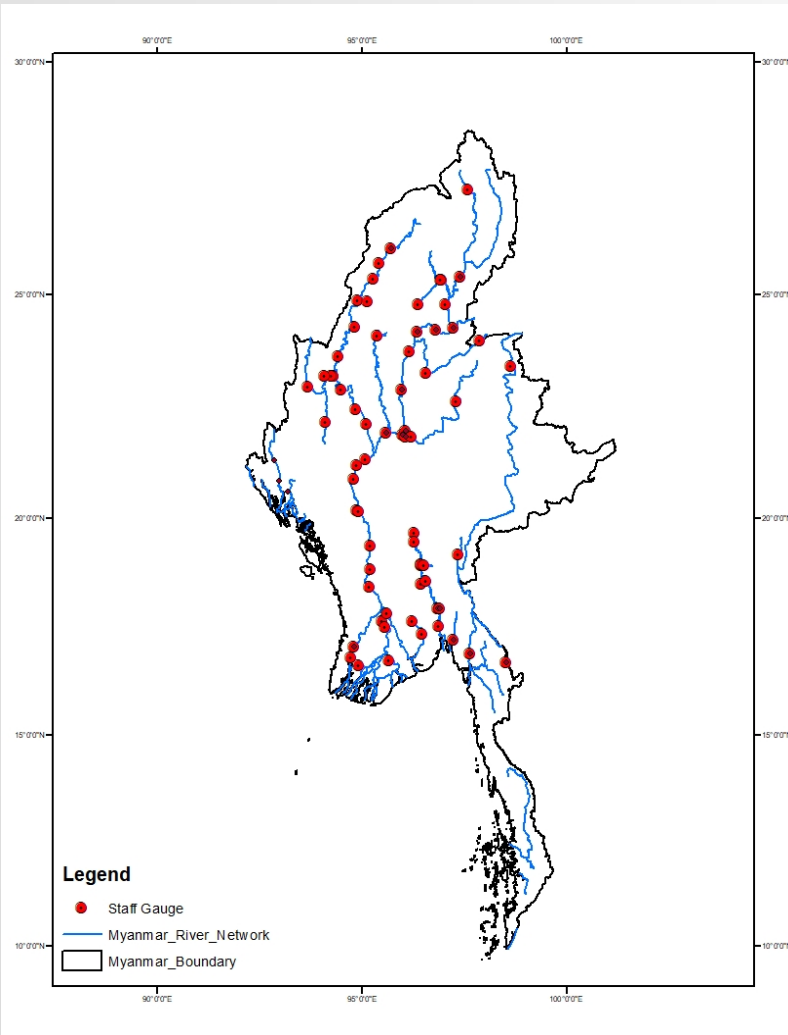


Nagarpauk Sluice



TELEMETRY WATER LEVEL MONITORING STATIONS

DMH also set up Telemetry Water Level Monitoring System, (27) Hydrological Stations along Ayeyarwady, Chindwin, Sittaung, and other small rivers cooperation with RIMES, JICA, OYO, IRM and India Government. (76) Hydrological Stations by AIRBM Project.



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Practitioners Meeting on Platform on Water Resilience and Disasters in Myanmar was held in Naypyitaw, Myanmar in September 2018 for

Data Management Policy (Data sharing guidelines)

Procedure of DIAS (Web based System for Hydrological and Meteorological Data) Archiving was introduced

Three components:

- (1) Web-based **Data Uploading** system
- (2) Web-based **Data Quality Control** system
- (3) Web-based **Metadata Registration** system

“**Use of DIAS Training**” was conducted with a support of SATREPS Project as IFI Activities at YTU on 4-5 February 2019

PROPOSAL FOR EXPANSION OF PLATFORM ACTIVITIES

- “Efficiency Enhancement of Regional Irrigation and Water Management Phase 2 Project” has been proposed as an **ASEAN Cooperation Project** to implement the latest Low-cost telemetry (TM) system in **Red River Basin in Vietnam** and **Sittaung River Basin in Myanmar** in cooperation with **ADCA** (Agricultural Development Consultants Association) with **JAIF (Japan ASEAN Integration Fund)**
- A total of **21 Station Sites** in the **Sittaung River Basin** are proposed to install Auto Weather Stations and Auto Water Level Stations not only for Irrigation and Water Management purposes but also can be utilized for Flood Disaster Risk Reduction Measures
- Hydro-meteorological Data from the **21 Stations** in the Sittaung River Basin could be linked to the web-based DIAS in Japan as an expansion of **SATREPS’s 8 stations in Bago Basin** and **ICHARM’s 3 stations in Sittaung Basin**

PROPOSAL OF CAPACITY DEVELOPMENT

- Capacity Building Programs are necessary for Core Departments of Flood Disaster Risk Reduction Management (DDM, DMH, IWUMD, DWIR and YTU)
- It is required to create the Capacity Building Proposal for developing Database and Data Sharing System like as DIAS in National Level and Institutional Level
- It is also required to create Joint Research and collaboration programs between strategic partners
- Continuous learning and trainings to young generations
- To install more stations to monitor the data in the country
- More integration between lined agencies for the effective management
- To promote MAPDRR activities all over the country

ROADMAP/STRATEGIC WAY FOR GLOBAL AGENDA

Platform activities linkage with SDGs



SDG 13: Climate Action:

Take urgent action to combat climate change and its Impact



SDG 11: Sustainable cities and communities:

Make cities and human settlements inclusive, safe, resilient and sustainable

ROADMAP/STRATEGIC WAY FOR GLOBAL AGENDA

Platform activities related to Sendai Framework

- Platform supports to be more understanding of disaster risks in the country
- Disaster risk governance will be strengthened to manage disaster risk by platform activities
- Disaster risk reduction for resilience can be promoted by platform activities
- Platform activities enhance disaster preparedness for effective response and to build back better in recovery, rehabilitation and reconstruction

CONCLUSIONS

1. Data sharing policy has not finalized yet for the platform
2. Installation of Telemetry System into the existing meteorological and hydrological stations have not completed yet due to limited budgets
3. Although above mentioned shortcomings, capacity of the staffs in the main line agencies have being upgraded to a certain level by implementation of the platform activities
4. Currently, platform activities are implemented as a pilot project for Bago river basin only, so that, it has to be replicated and spread out to other river basins in the country
5. The analysis outputs from the platform activities has to be delivered to the decision makers as well as end users

**Thank You Very Much
For Your Kind Attentions**



**Thank you
for your Attention**

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14/11/2019