

Challenges, current warning and response system

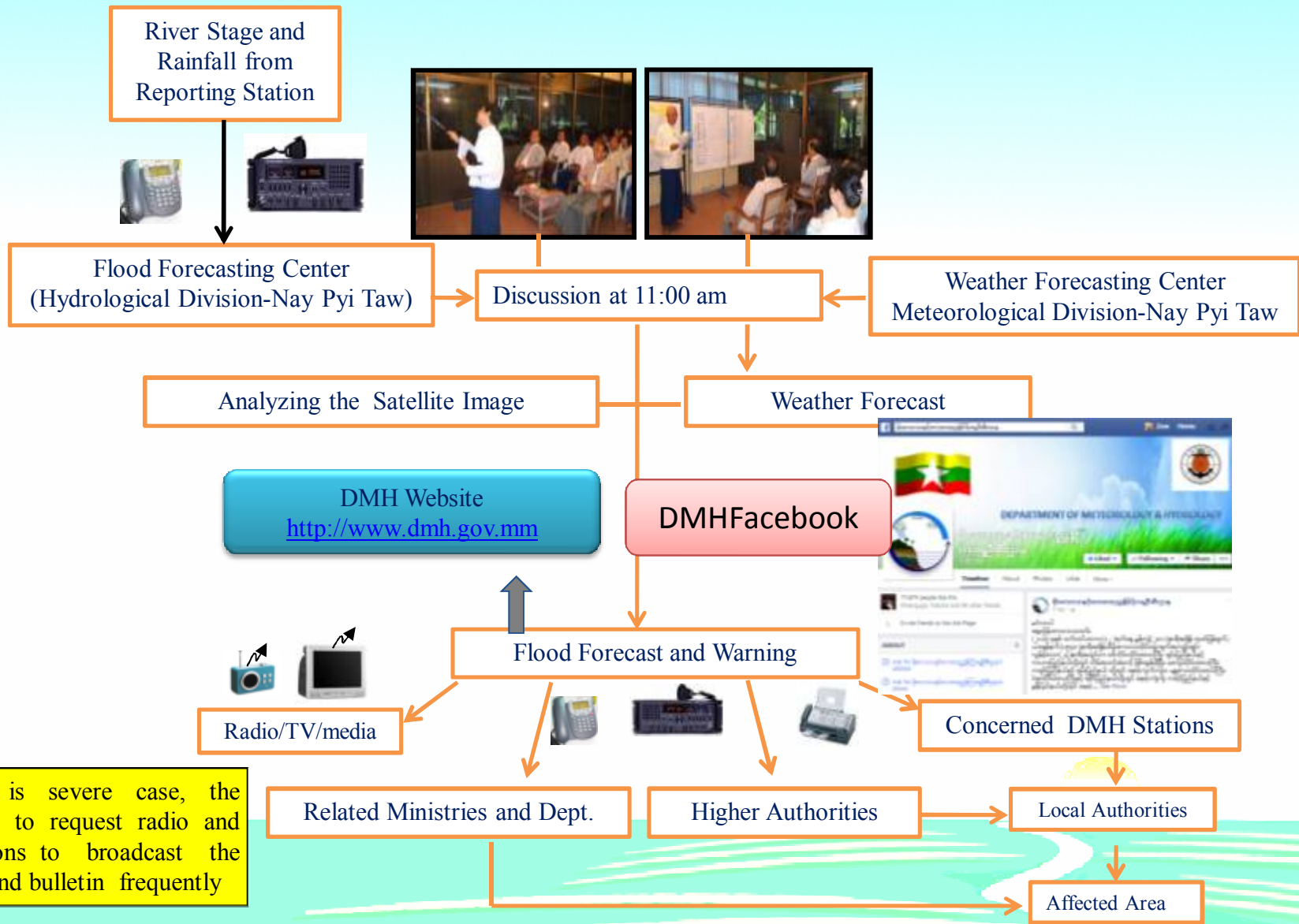
Mr. Than Zaw
Assistant Director

Department of Meteorology and Hydrology
Myanmar



- ❖ Recent met & hydrological hazards
- ❖ Hydrological activities in DMH
- ❖ Challenges and requirements
- ❖ Disaster reduction activities

Forecasting, warning and dissemination



Flood bulletin

Flood Bulletin

(Issued at 13:00 hr M.S.T on 14-9-2015)

(1) Falling condition below danger levels

According to the (12:30) hr M.S.T observation today, the water level of Ayeyarwady River has exceeded by about (3) inches at Minbu above its danger level. It may fall below its danger level during the next (1) day. According to the (12:30) hr M.S.T observation today, the water levels have exceeded by about (1) foot each at Phaung Pyin, Mawlaik and Monywa, ($\frac{1}{2}$) foot at Kalewa and (2) feet at Mingin of Chindwin River above their respective danger levels. The water levels may fall below their respective danger levels at Phaung Pyin, Mawlaik and Kalewa during the next (1) day and at Mingin and Monywa during the next (2) days.

(2) Rising condition above danger levels

According to the (12:30) hr M.S.T observation today, the water levels have exceeded by about ($1\frac{1}{2}$) feet each at Hinthada and Zalun of Ayeyarwady River and Ngathaing Chaung of Ngawun River above their respective danger levels. The water levels may continue to rise about ($\frac{1}{2}$) foot during the next (3) days and may remain above their respective danger levels.

It is especially advised to the people who settle near the river bank and low lying areas in Hinthada District (Ayeyarwady River) and along the Ngawun River, to take precaution measure.

(3) Flood condition above danger level

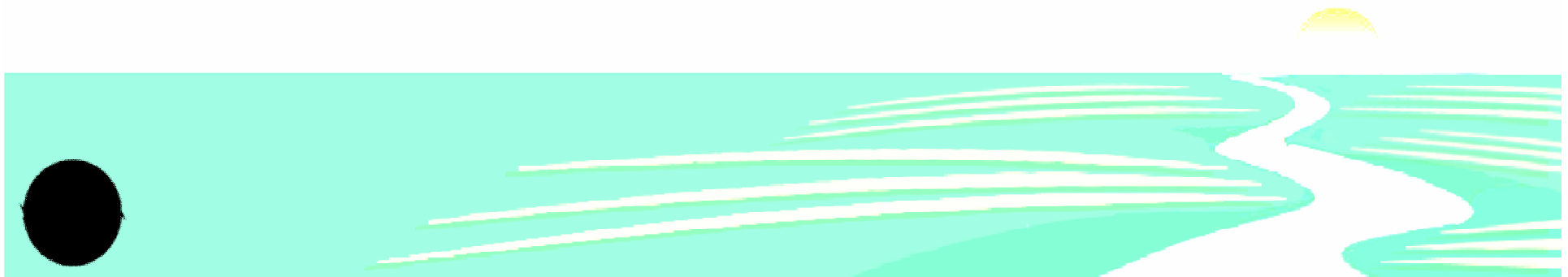
According to the (12:30) hr M.S.T observation today, the water level has exceeded by about (2) feet at Nyaung Oo of Ayeyarwady River above its danger level. It may fall about (1) foot during the next (2) days and may remain above its danger level.

It is especially advised to the people who settle near the river bank and low lying areas in Nyaung Oo District, to take precaution measure.



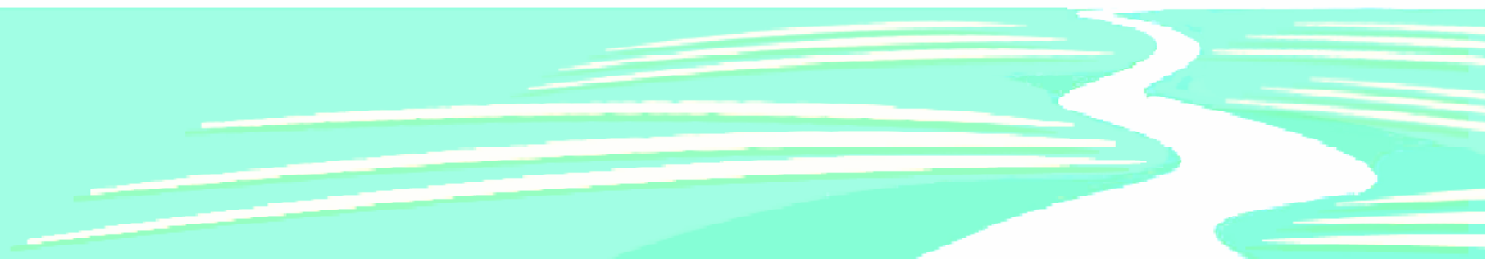
Challenges of river forecasting system in Myanmar

- Advanced flood forecasting techniques for large catchment like [Ayeyarwaddy river basin](#).
- Observations system (manual gauge like Pile, staff and mixed gauge to measure the water level at 3 times per day)
- Data transfer system (SSB, Phone, fax, etc.,)
- Database Management System
- Few hydrologist and less hydrological forecaster
- Less knowledge about the techniques (GIS and RS and hydrologic/ hydraulic modelling techniques to apply the flood forecasting system.)
- Insufficient data to develop the hydrologic model. Especially in Northern and Eastern part of Myanmar.
- High Performance Computers

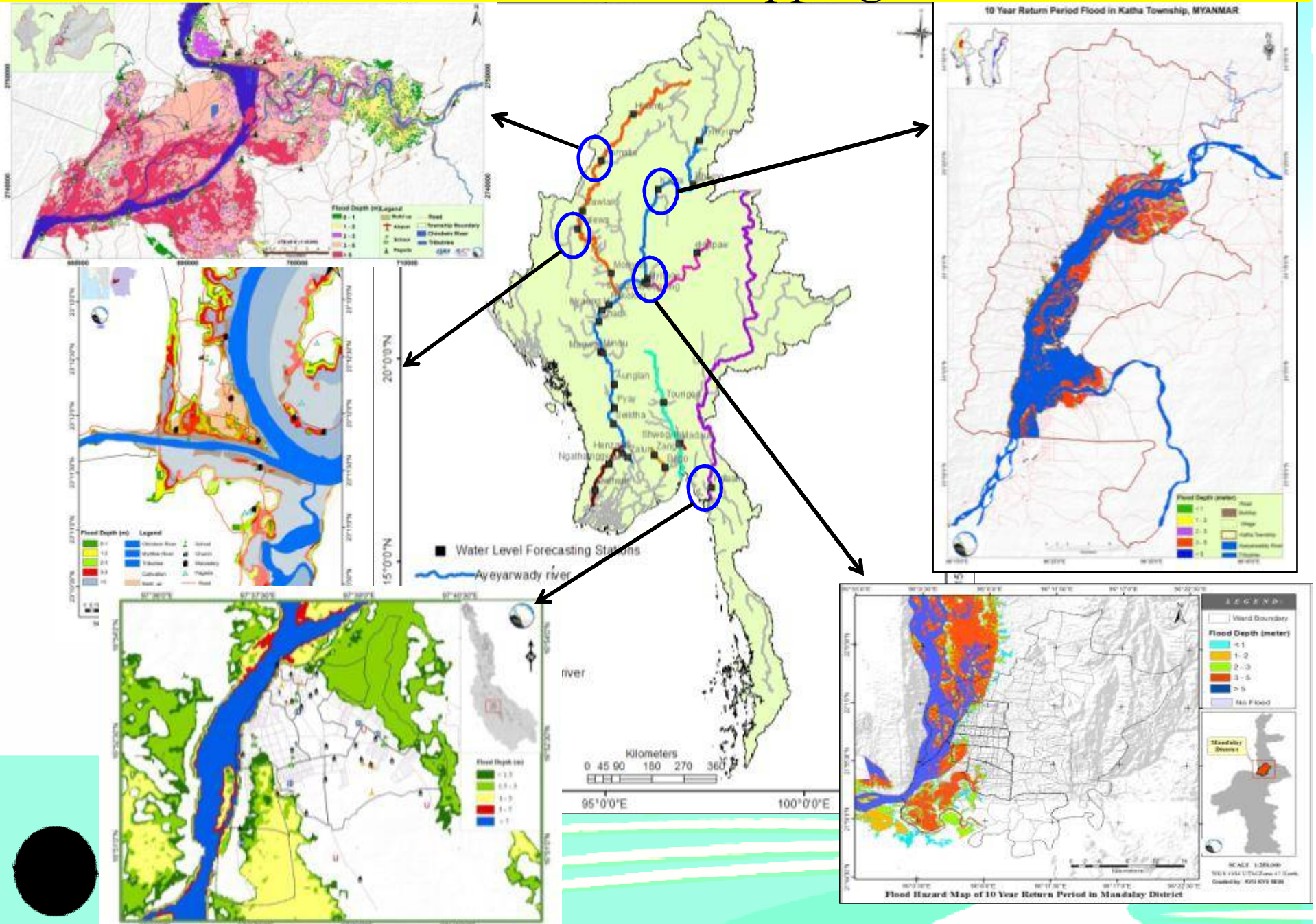


Requirements to improve existing flood warning system

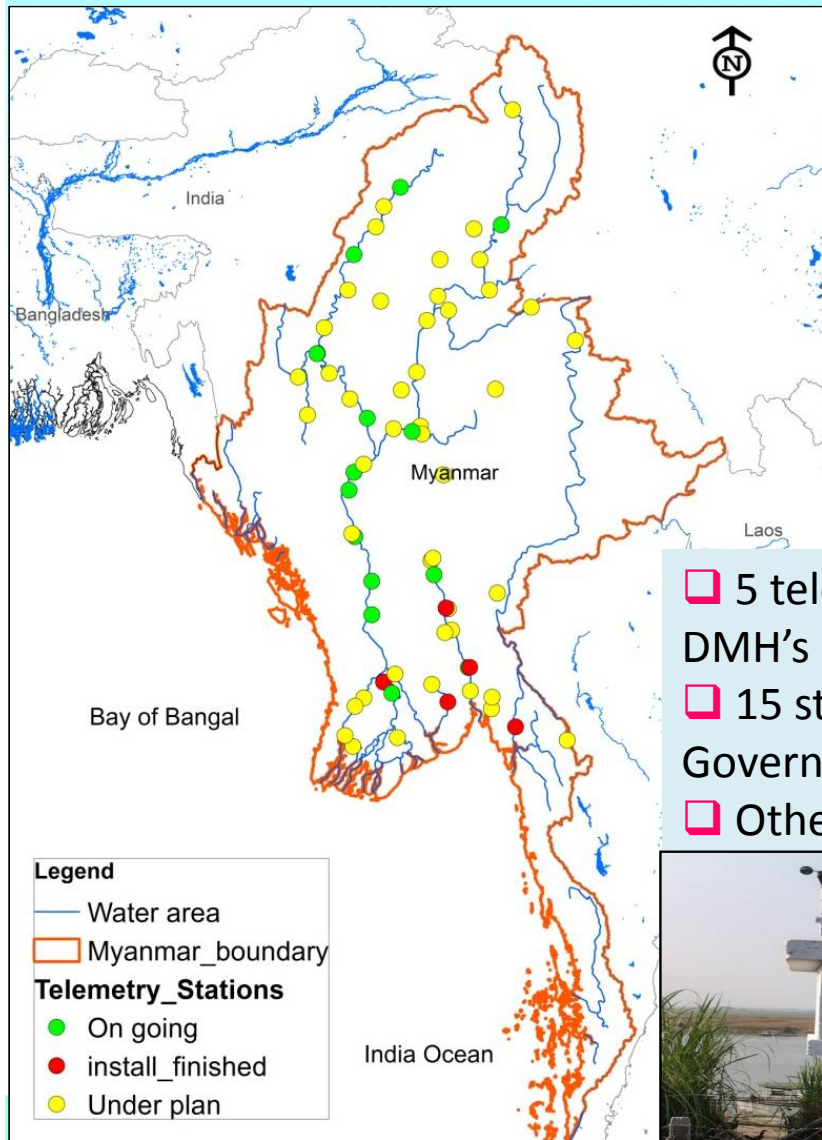
- To upgrade the flood forecasting center
- To improve the advance and effective flood forecasting techniques
- To install the telemetry system
- To install the siren at flash flood area
- To establish the flood detection system such as CCTV monitoring system, communication system
- Medium-term training for Human Resource Development for DMH, Myanmar
- Long term fellowship for hydrology in order to improve the flood forecasting
- Long term fellowship for Remote Sensing and GIS application in Hydrology



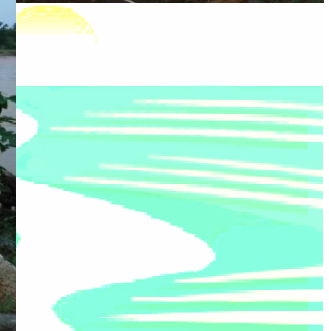
Flood hazard mapping



Present and ongoing activities



- 5 telemetry stations already installed by DMH's own budget
- 15 stations will be installed by India Government's funding
- Other stations are under the plan



Disaster mitigation activities

Early Warning and Disaster Management

- Disaster Preparedness and Emergency Response:
 - Clear roles and responsibilities
 - Organisational structure
 - Information flow vertically and horizontally
 - Standard Operation Procedures(SOPs) and damage and needs assessments
 - Clear evacuation procedures and routes in place
 - Public education and community awareness
- Effective and efficient response



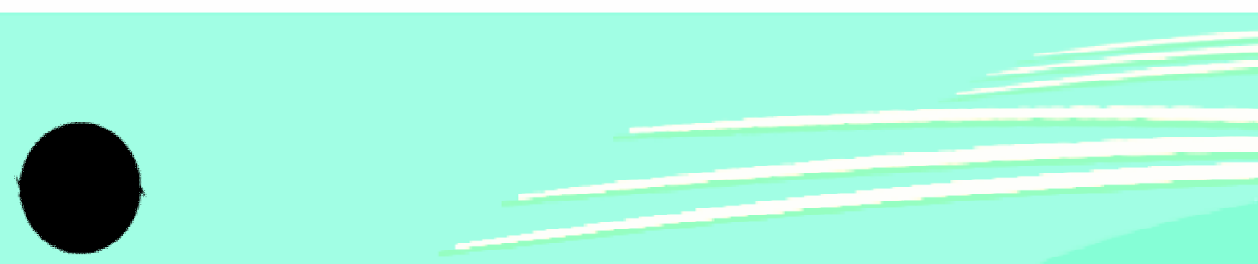
Workshop meeting



Public education

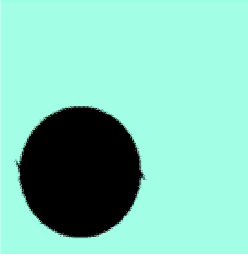


Emergency response/evacuation



Disaster mitigation activities

Risk assessment meeting and trainings



Action for Awareness

PUBLIC EDUCATION

Conscientious community participation is of much importance for effective implementation of disaster prevention, preparedness, relief and rehabilitation. To attain this objective, the Department of Relief and Resettlement, in collaboration with the Department of Meteorology and Hydrology, Fire Services Department, Department of Health, Department of Irrigation, Myanmar Police Force and the Myanmar Red Cross Society, organizes disaster management courses in the State and Divisions. The aims of the training are to enhance disaster management capacity of authorities concerned and members of NGOs to conduct multiplier courses in their respective township and to organize, educate and motivate people for cooperation in the field of disaster management.



"Awareness Training in Local Communities"

National Training Course
on Mainstreaming Disaster and Climate Risk
Management into Development Planning in
Myanmar



Session 1.3 Understanding Hazards in Myanmar



adpc



Australian
AID

Action for Awareness



MINISTRY OF TRANSPORT
DEPARTMENT OF METEOROLOGY AND HYDROLOGY
TRAINING ON DISASTER RISK INFORMATION TRANSLATION
INTO IMPACTS OUTLOOK AND RESPONSE OPTIONS
JOINTLY SPONSORED BY DMH & RIMES
31 JULY - 1 AUGUST 2012
YANGON, MYANMAR



<p>အချက်အလက်</p> <p>ဒီဇင်ဘာ ၂၀၁၂ ခုနှစ် ဇူလိုင်လ ၃၁ ရက်နေ့မှ ဇူလိုင်လ ၃၁ ရက်နေ့အထိ</p> <p>အချက်အလက်</p> <p>ဒီဇင်ဘာ ၂၀၁၂ ခုနှစ် ဇူလိုင်လ ၃၁ ရက်နေ့မှ ဇူလိုင်လ ၃၁ ရက်နေ့အထိ</p>	<p>အချက်အလက်</p> <p>ဒီဇင်ဘာ ၂၀၁၂ ခုနှစ် ဇူလိုင်လ ၃၁ ရက်နေ့မှ ဇူလိုင်လ ၃၁ ရက်နေ့အထိ</p> <p>အချက်အလက်</p> <p>ဒီဇင်ဘာ ၂၀၁၂ ခုနှစ် ဇူလိုင်လ ၃၁ ရက်နေ့မှ ဇူလိုင်လ ၃၁ ရက်နေ့အထိ</p>	<p>အချက်အလက်</p> <p>ဒီဇင်ဘာ ၂၀၁၂ ခုနှစ် ဇူလိုင်လ ၃၁ ရက်နေ့မှ ဇူလိုင်လ ၃၁ ရက်နေ့အထိ</p> <p>အချက်အလက်</p> <p>ဒီဇင်ဘာ ၂၀၁၂ ခုနှစ် ဇူလိုင်လ ၃၁ ရက်နေ့မှ ဇူလိုင်လ ၃၁ ရက်နေ့အထိ</p>	<p>အချက်အလက်</p> <p>ဒီဇင်ဘာ ၂၀၁၂ ခုနှစ် ဇူလိုင်လ ၃၁ ရက်နေ့မှ ဇူလိုင်လ ၃၁ ရက်နေ့အထိ</p> <p>အချက်အလက်</p> <p>ဒီဇင်ဘာ ၂၀၁၂ ခုနှစ် ဇူလိုင်လ ၃၁ ရက်နေ့မှ ဇူလိုင်လ ၃၁ ရက်နေ့အထိ</p>	<p>အချက်အလက်</p> <p>ဒီဇင်ဘာ ၂၀၁၂ ခုနှစ် ဇူလိုင်လ ၃၁ ရက်နေ့မှ ဇူလိုင်လ ၃၁ ရက်နေ့အထိ</p> <p>အချက်အလက်</p> <p>ဒီဇင်ဘာ ၂၀၁၂ ခုနှစ် ဇူလိုင်လ ၃၁ ရက်နေ့မှ ဇူလိုင်လ ၃၁ ရက်နေ့အထိ</p>	<p>အချက်အလက်</p> <p>ဒီဇင်ဘာ ၂၀၁၂ ခုနှစ် ဇူလိုင်လ ၃၁ ရက်နေ့မှ ဇူလိုင်လ ၃၁ ရက်နေ့အထိ</p> <p>အချက်အလက်</p> <p>ဒီဇင်ဘာ ၂၀၁၂ ခုနှစ် ဇူလိုင်လ ၃၁ ရက်နေ့မှ ဇူလိုင်လ ၃၁ ရက်နေ့အထိ</p>
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Satellite Data Applications of Department of Meteorology and Hydrology

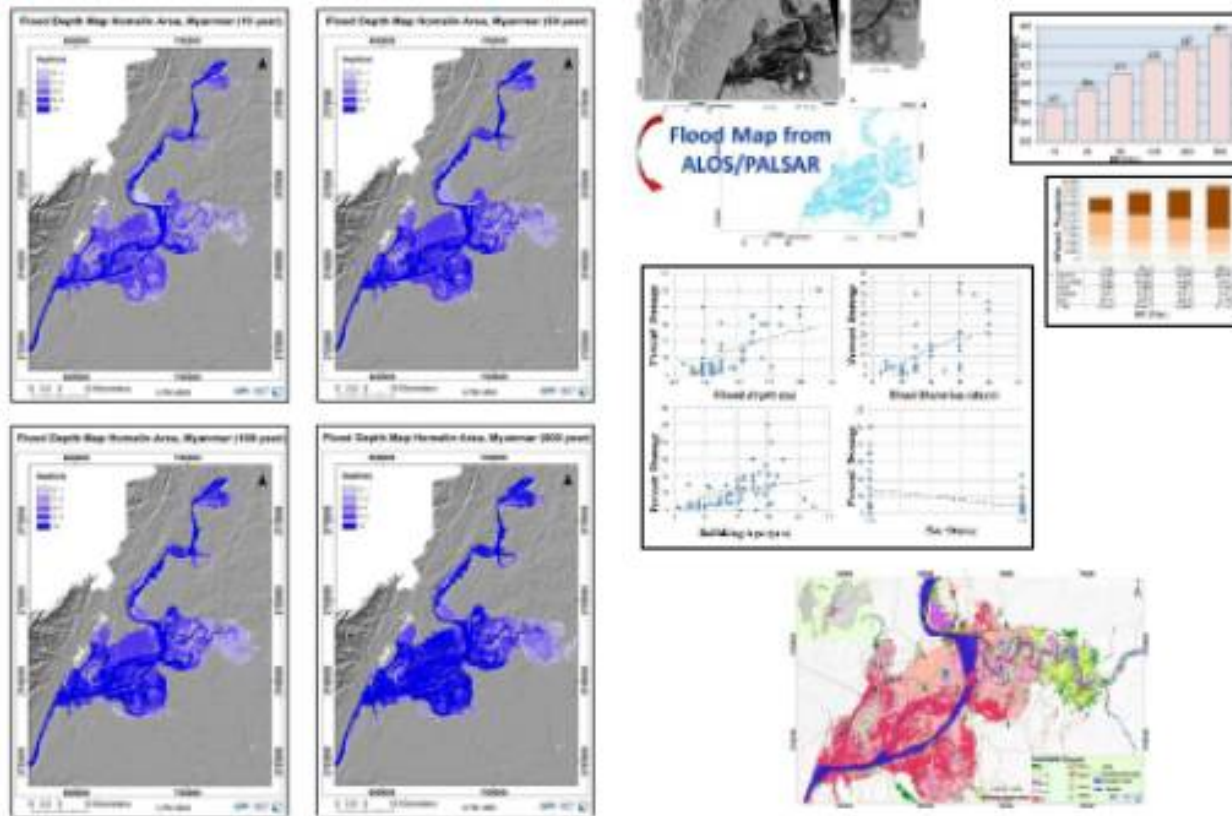
Warning, Bulletin, Forecast and News

- Cyclone Warning
- Storm Surge Warning
- Flood Warning
- Untimely Rainfall Warning
- Fog Warning
- Heavy Rain Warning
- Aviation Weather Warning
- Low flow water level
- Tsunami Warning
- Port Warning
- ✓ Agro-meteorological Bulletin
- ✓ Bay Bulletin
- ✓ Flood Bulletin
- ✓ Special Weather Bulletin
- ❖ Daily Weather/Water Level
- ❖ 10 Days Weather/Flood
- ❖ Monthly Weather/Flood
- ❖ Seasonal Weather/River Flood Forecast
- ❖ Aviation Weather Forecast
- ❖ Marine Weather Forecast
- ❖ Special Forecast
- Earthquake News
- Rainfall / Temperature Records
- Cyclone News

Source: Department of Meteorology and Hydrology

RIVER FLOOD ANALYSIS for the Homalin City, MYANMAR

Cooperation between JAXA, AIT (GIC), DMH



Source: Department of Meteorology and Hydrology

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THANKS A LOT FOR YOUR KIND ATTENTION