# "The Workshop on The  Impact Based Forecast"

# Multi Hazard Impact-Based Early Warning Systems and Services

## Myanmar

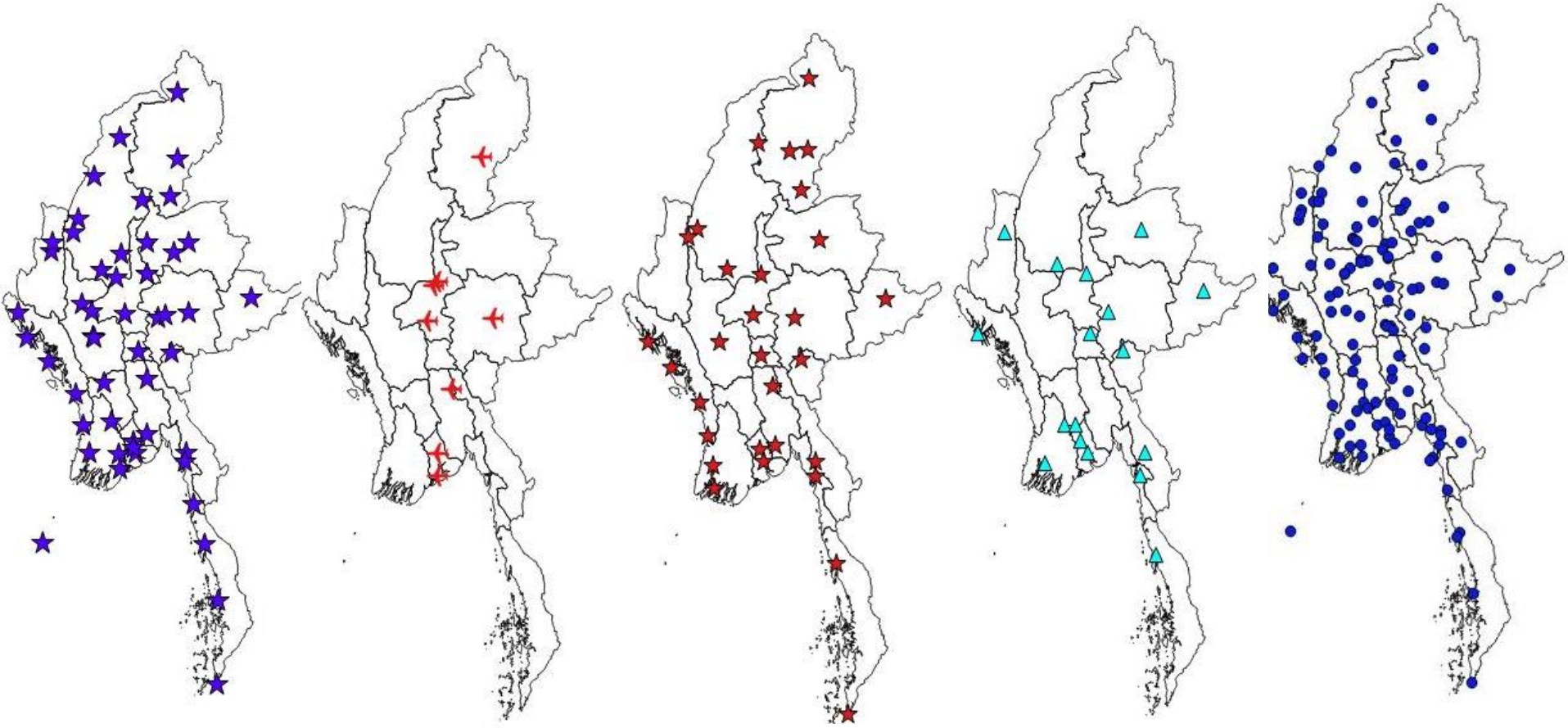
Soule, Korea

19-21, Nov 2018

# *Outlines_*

- ✓ **1.Current Hydro-Meteorological Networks**
- ✓ **2.Meteorological and hydrological Hazards**
- ✓ **3.Working Relations among agencies**
- ✓ **4. Impact-based forecasts and warnings**
- ✓ **5. Multi-hazard early warning systems and services**
- ✓ **6. Strengths and weaknesses**

# 1.Current Hydro-Meteorological Networks



51 WMO GTS Stations

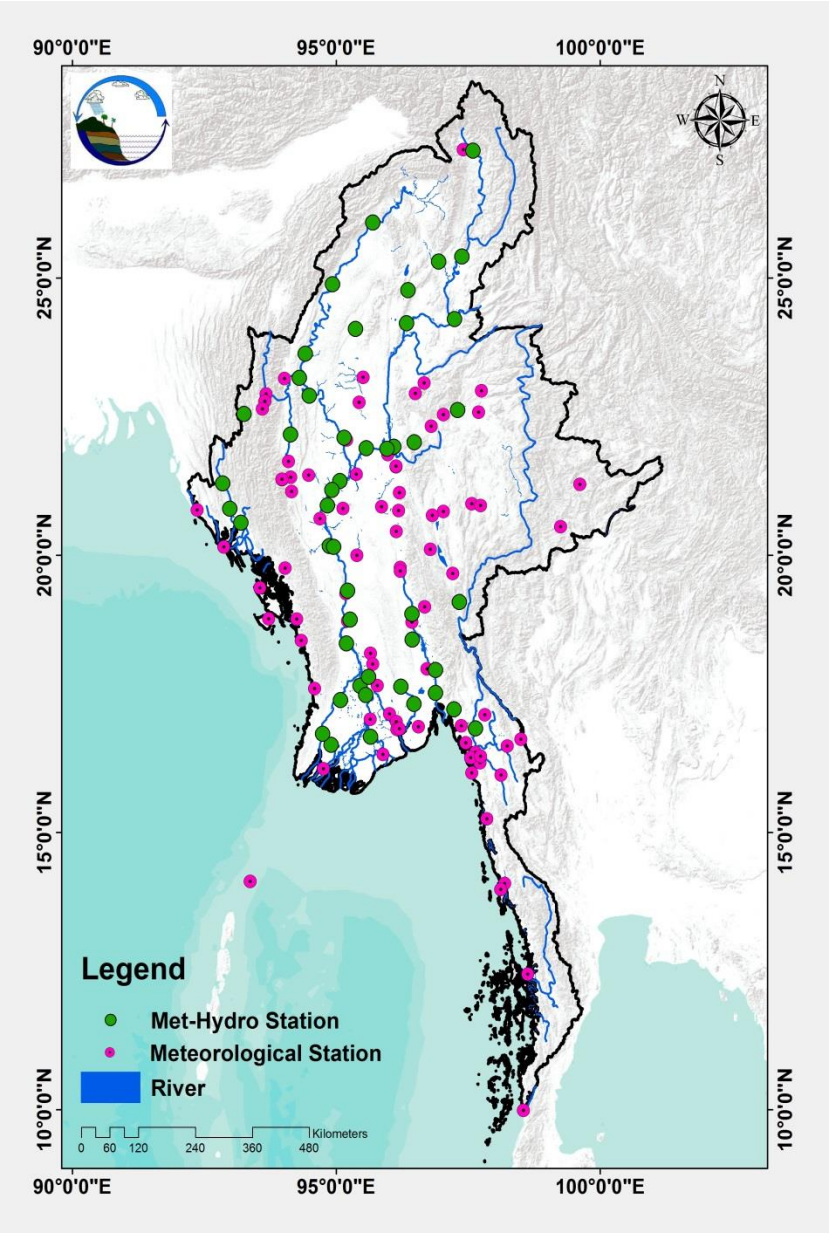
8 Aviation Stations

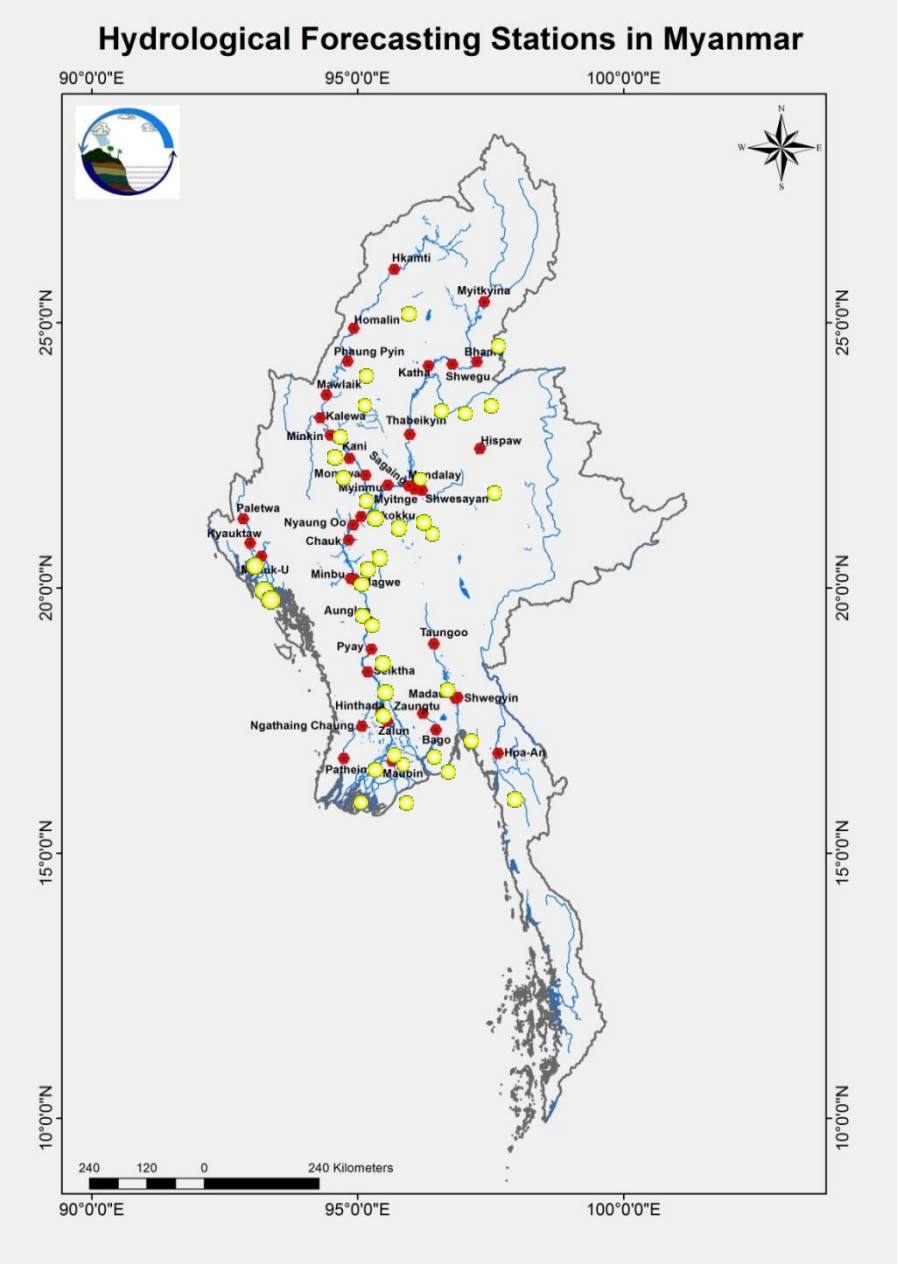
30 AWOS Stations

17 Agro_Met Stations

121Reporting Stations

# Hydrometeorological Network

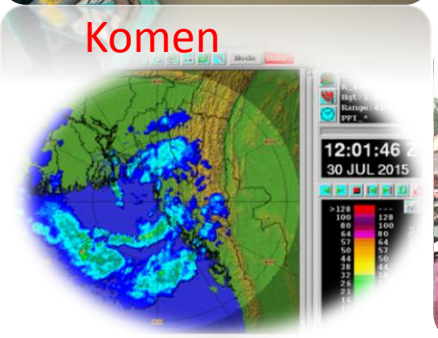


# 2.Meteorological and hydrological Hazards

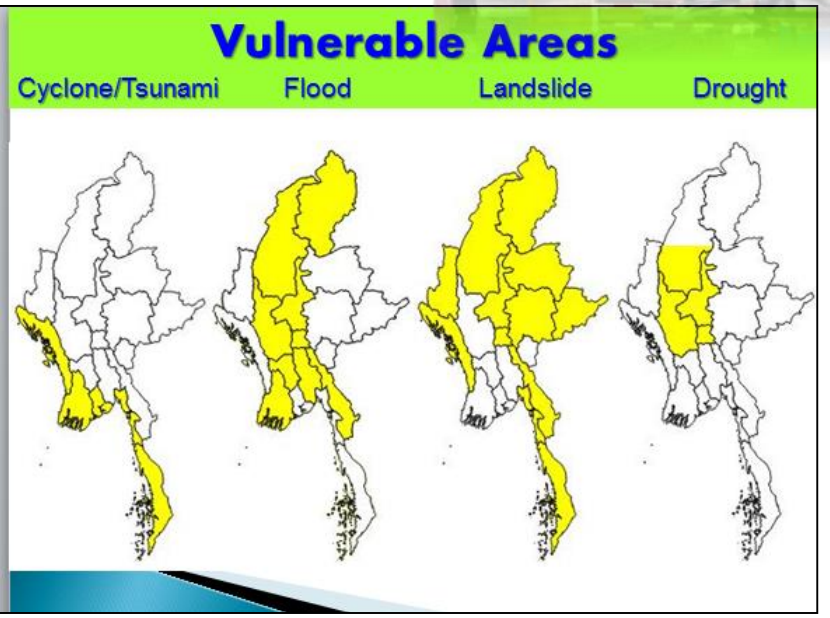
# HAZARDS PROFILE IN MYANMAR

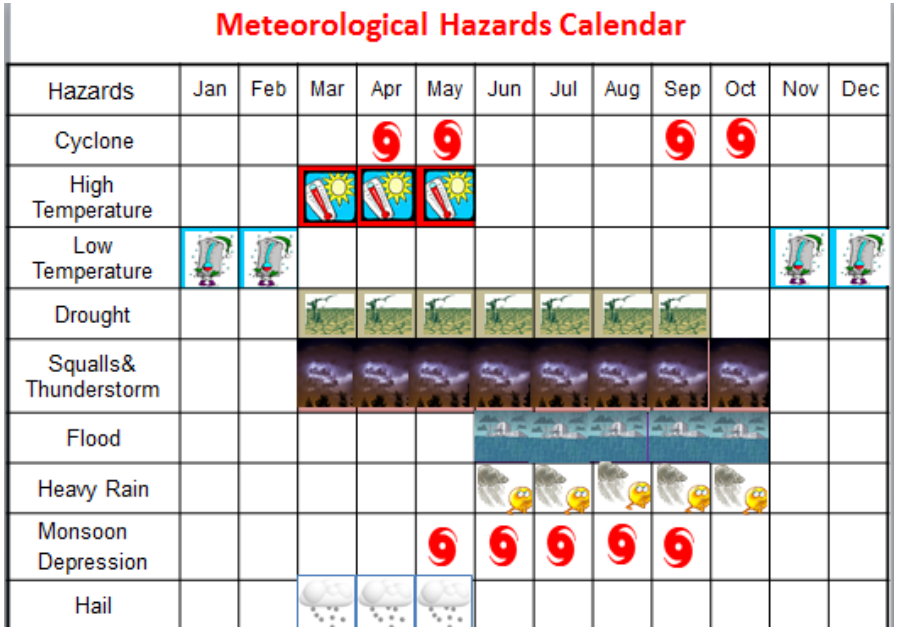






Meteorological Hazards Calendar of Myanmar



# Primary Meteorological and Hydrological Hazards

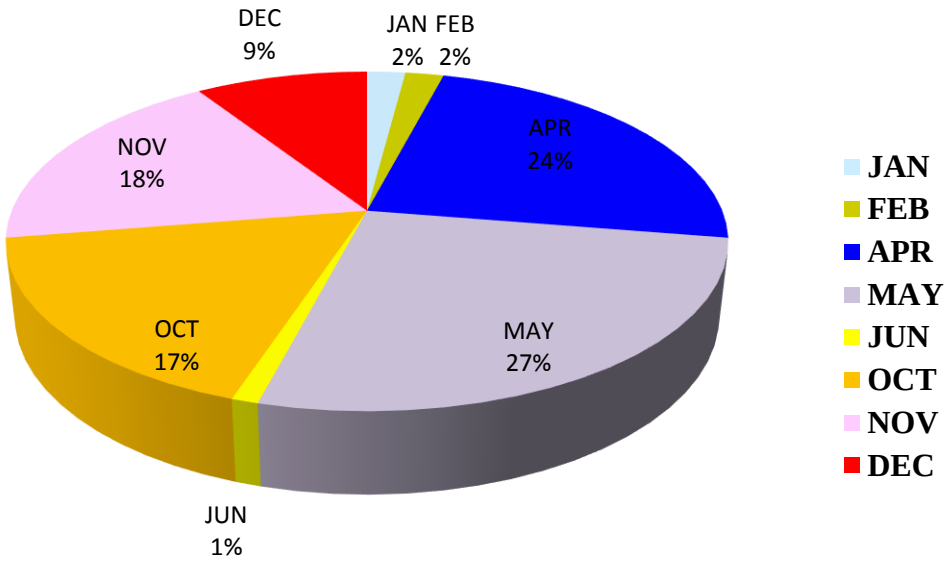
**Meteorological Hazards**

- Cyclone
- Heavy Fall
- Storm Surge
- Extreme Temperature
- Scanty Rainfall

**Hydrological Hazards**

- River Flood
- Flash Flood
- Coastal Flood

## Number and percent âgé of Cyclones which crossed Myanmar coasts1877-2015



# 2010/2011/2015 Myanmar Extreme Climate… Herald ?


- Extreme Temperature
- 47.2 °C
- Myinmu(Dry zone)
- 14 May 2010
- El Nino (Drought)

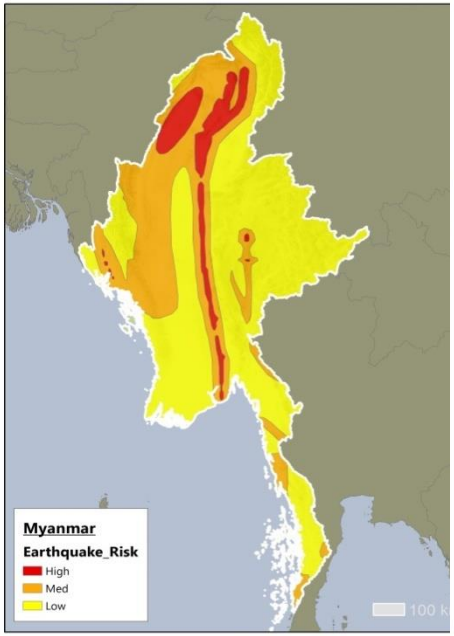
- Extreme Rainfall
- 29.10 Inches/12Hr
- Taungkok(Coastal)
- 21 July 2011
- Anti El Nino (Flood)

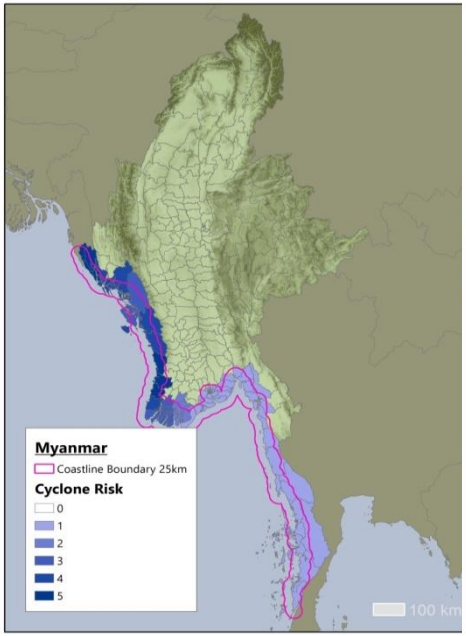
Extreme Rainfall
7.83 Inches/24Hr
Kanbalu(Lower Sagaing)
18 July 2015
(Flood)

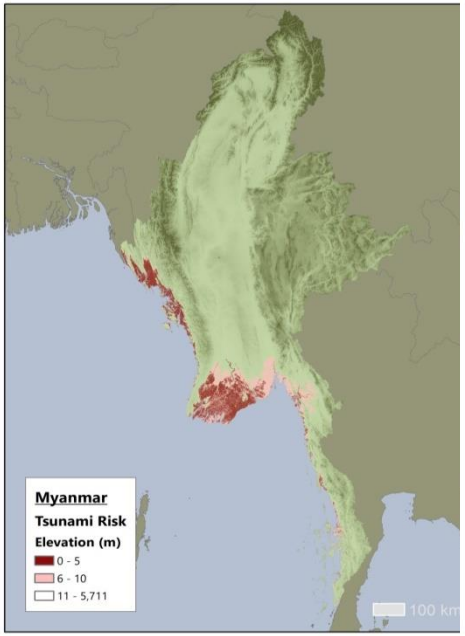
Extreme Rainfall
8.03 Inches/24Hr
Paletwa(CHIN)
27 July 2015
(Landslide)

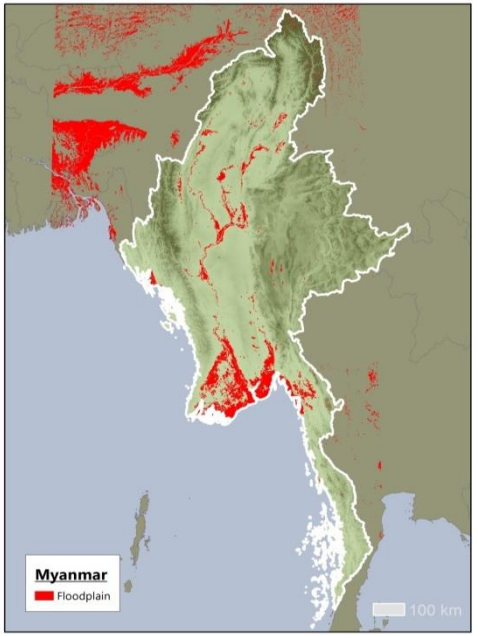
Different types of Impacts on Socio-Economic Value and Different sectors Agriculture, etc.

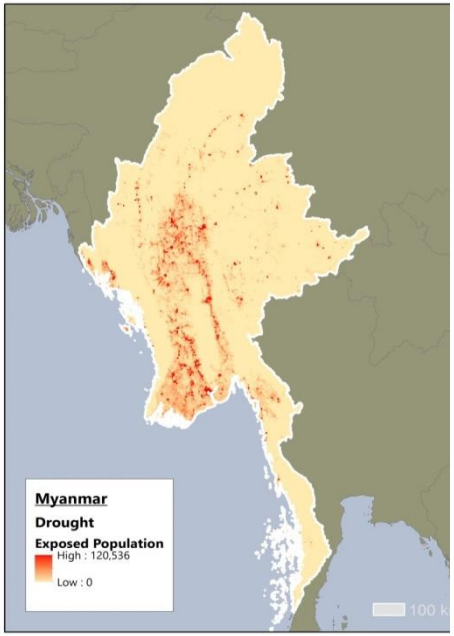
# Meteorological and Hydrological Hazards

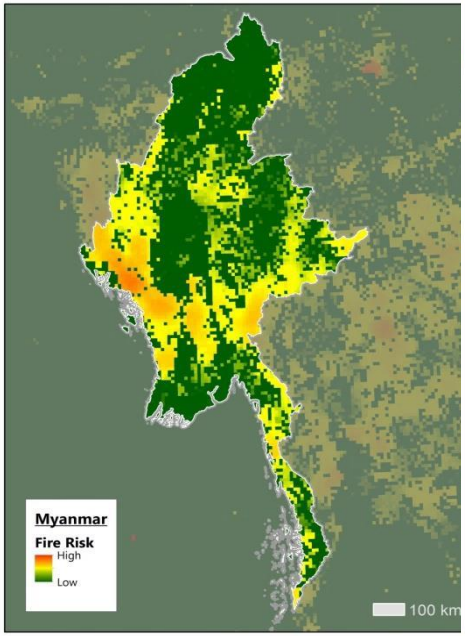


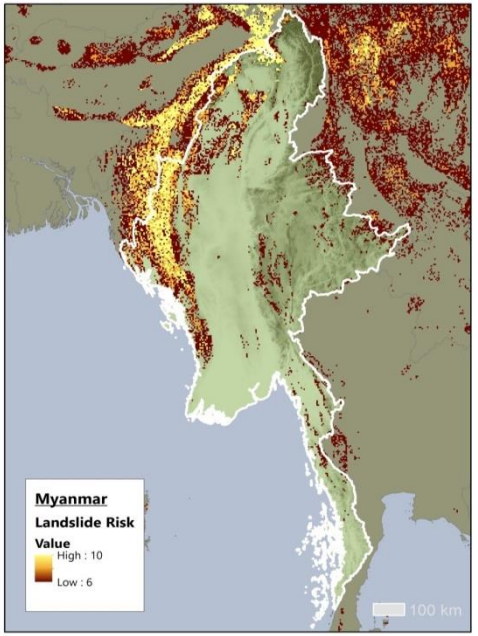




Source: UNICEF 2016 Updating the CCRA, CCVA (12082016)

# 3.Working Relations among agencies


**forecasting, warning and response to meteorological and hydrological hazards**

MSWRR

Myanmar Red Cross Society

MOI

အထွေထွေအုပ်ချုပ်ရေးဦးစီးဌာန
GENERAL ADMINISTRATION DEPARTMENT

responsibilities of agencies/departments

➢ **In case of Emergency Situation,**

- **Supporting for emergency management, response and logistic through information sharing on network and quick decision making.**
- **Providing the comprehensive solution to the decision makers by collecting necessary data and information for effective response.**
- **Cooperation with related organizations for making plans to give assistance the needs of disaster affected people in disaster affected area.**

# 4. Impact-based forecasts and warnings

## *Warning issued by DMH*

- Storm Warning
  (Storm Surge Warning)
- Untimely Rainfall Warning
- Fog Warning
- Strong wind warning
- Heavy Rain Warning
- Scanty Rainfall Warning

- Flood Warning
- Minimum Alert Warning

**agency/department responsible for the systematic collection of vulnerability and exposure data**

MSWRR

GENERAL ADMINISTRATION DEPARTMENT

MIMU
MOHA
MOAI
MOC

# COLOUR CODING FOR THE STORM

**Doesn't depend on storm 's intensity (ie, whatever it is TD, TC or CS), it means only for RISK of the storm.**

**Stage 1:**
- **Whatever the storm is TC or CS , which is not expected to move towards Myanmar coast by the present.**

**Stage 2:**
- **Whatever the storm is TC or CS, which is leading to Myanmar coast by the present.**

**Stage 3:**
- **Whatever the storm is TS or CS, which may cross to Myanmar coast within next (12)hrs.**

**Stage 4:**
- **Whatever the storm is TS or CS, which is crossing to Myanmar coast by the present.**

**Stage 5:**
- **Whatever the storm is TS or CS, which has crossed to Myanmar coast & free from storm risk.**

# Heavy falls warning

(Issued (14:30) hrs MST on 24- 7-2015)

According to the observations and analysis of meteorological conditions at (14:00) hrs MST today, under the influence of strong monsoon in the Bay of Bengal, rain or thundershowers will be fairly widespread to widespread in the following Regions and States with regionally and isolated heavy falls during the next (3) days commencing afternoon today.

During (24) hours, Rain are likely to be above (3) inches, (77)mm in Upper Sagaing and Bago Regions, Shan, Chin, Rakhine, Kayin and Mon States.

During (24) hours, Rain are likely to be above (1.5) inches, (38)mm in Lower Sagaing, Mandalay and Magway Regions.

Advisory for the people that living near high land areas, small rivers and streams to avoid landslide and suddenly rise the river level.

| Sr. No. | City | Date | mm | Inches | Recorded Year |
|---|---|---|---|---|---|
| 1 | Moemate | 25.7.2015 | 101 | 3.98 | 32 |
| 2 | Moekok | 25.7.2015 | 170 | 6.69 | 33 |
| 3 | Hakha | 27.7.2015 | 182 | 7.16 | 26 |
| 4 | Falam | 27.7.2015 | 143 | 5.63 | 51 |

# Heavy falls warning

(Issued (14:30) hrs MST on 27- 7-2015)

According to the observations and analysis of meteorological conditions at (14:00) hrs MST today, under the influence of the depression over Northeast Bay of Bengal and strong to vigorous monsoon in the Andaman Sea and Bay of Bengal, rain or thundershowers will be fairly widespread to widespread in the following Regions and States with regionally and isolated heavy falls during the next (3) days commencing afternoon today. During (24)hours, Rain are likely to be above (3) inches, (77)mm in Upper Sagaing, Bago, Yangon and Ayeyarwady Regions, Shan, Chin, Rakhine, Kayin and Mon States.

During (24) hours, Rain are likely to be above (1.5) inches, (38)mm in Lower Sagaing, Mandalay and Magway Regions.

Advisory for the people that living near high land areas, small rivers and streams to avoid landslide and suddenly rise the river level.

| Sr. No. | City | Date | mm | Inches | Recorded Year |
|---|---|---|---|---|---|
| 1 | Mindat | 30.7.2015 | 125 | 4.92 | 51 |

# DMH Activities for 2015 flood

## Flood Warning

(Issued at 13:00 hr M.S.T on 6-9-2015)

According to the (12:30) hrs M.S.T observation today, the water levels of Ayeyarwady River at Pakokku and Nyaung Oo are observed as about (2½) feet each below their respective danger levels. The water levels may reach their respective danger levels during the next (3) days.

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

Advisory

## Flood Bulletin

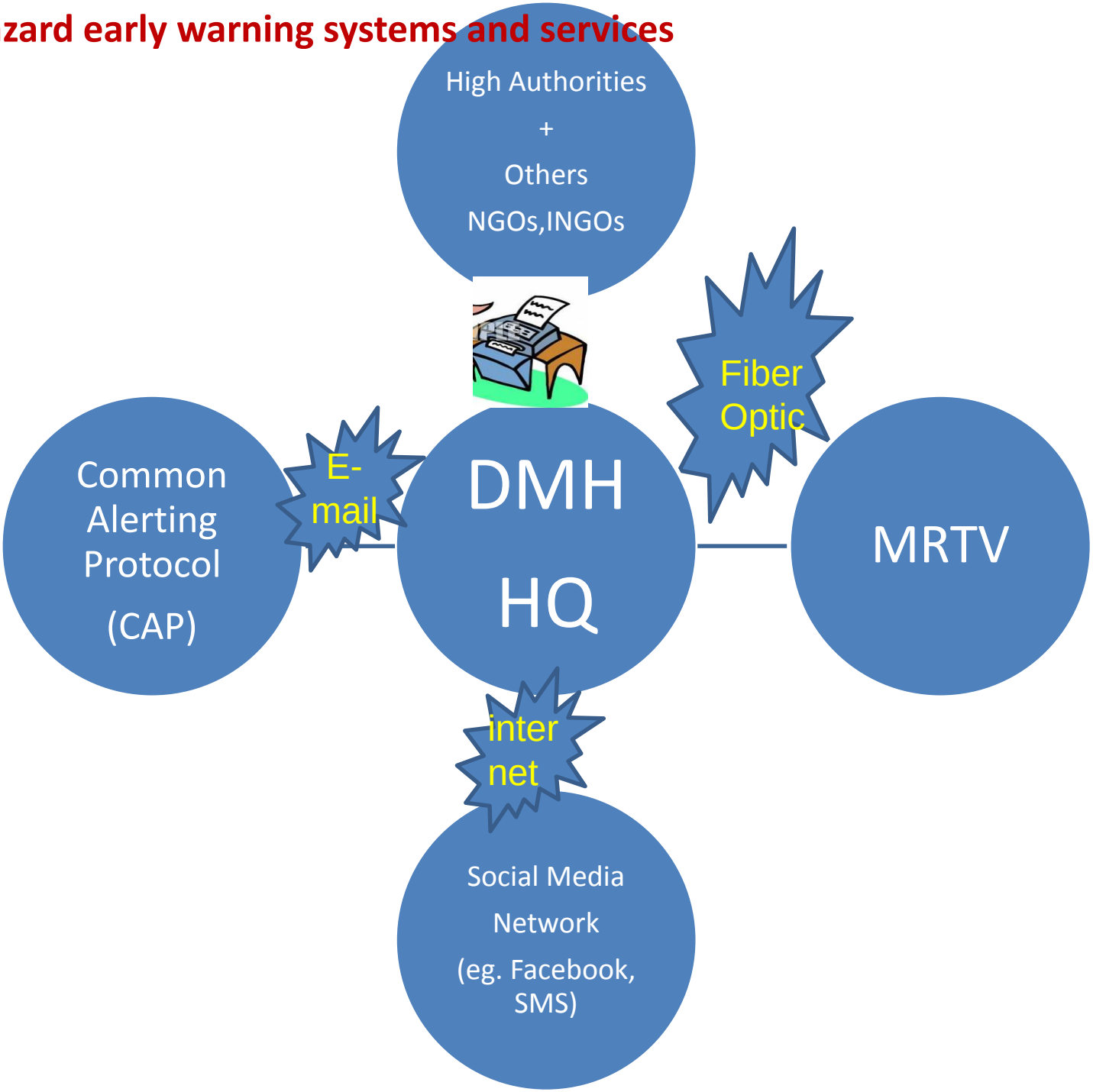
(Issued at 14:00 hr M.S.T on 9-9-2015)

(1) Rising condition above danger levels

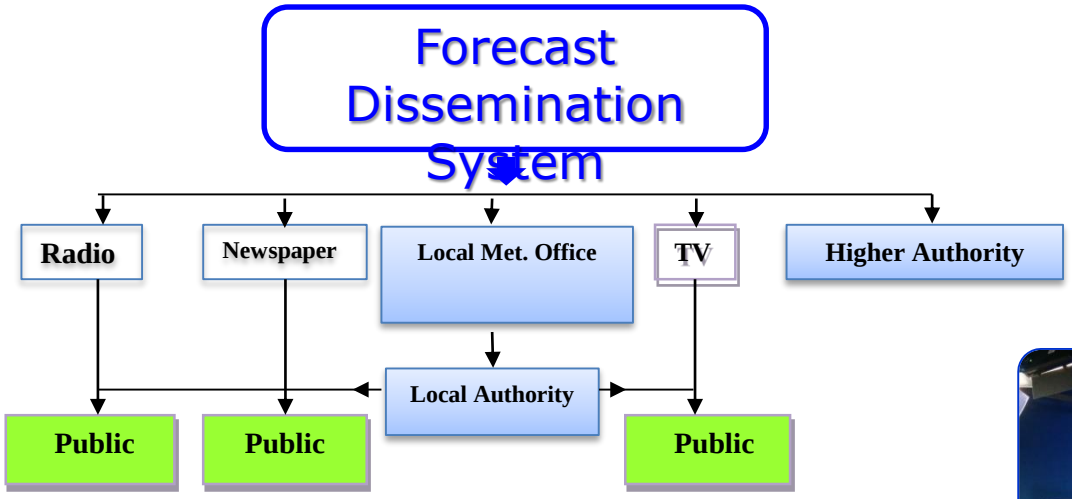
According to the (13:30) hr M.S.T observation today, the water levels have exceeded by about (2) inches at Pakokku and (2) feet at Nyaung Oo of Ayeyarwady River above their respective danger levels. The water levels may continue to rise about (1) foot each at Pakokku and Nyaung Oo during the next (2) 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 Pakokku and Nyaung Oo districts, to take precaution measure.

# 5. Multi-hazard early warning systems and services



# Forecast Dissemination System








www.dmh.gov.mm





Thank
You