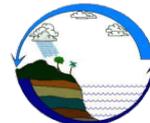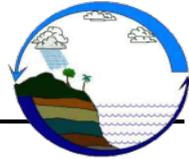# CAP on a MAP

Improving Institutional Responsiveness to Coastal Hazards through Multi-Agency Situational Awareness

Organized by Asian Institute of Technology and SAHANA Software Foundation in collaboration with UNESCAP

Department of Meteorology and

Hydrology

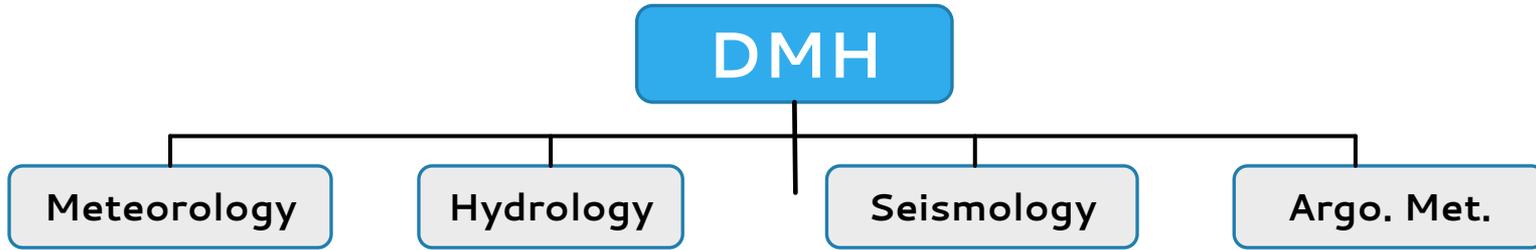**Ministry of Transport**

Myanmar

Mr. MYO TUN OO

Mr. TUN LIN KYAW

Ms. THIN THIN MAR

11 September 2015   **GIC, AIT**

Organization Chart of DMH

```
                        ┌──────────────┐
                        │     DMH      │
                        └──────┬───────┘
        ┌───────────────┬──────┴───────┬────────────────┐
 ┌─────────────┐  ┌─────────────┐ ┌─────────────┐  ┌─────────────┐
 │ Meteorology │  │  Hydrology  │ │ Seismology  │  │  Argo. Met. │
 └─────────────┘  └─────────────┘ └─────────────┘  └─────────────┘
```

| Meteorology	Hydrology	Seismology	Argo. Met.
To detect/ monitor the cyclone and issue the weather forecast, warning, bulletin and news.	To monitor and analysis of the river stage and issue the flood warning and bulletin issues.	To detect the earthquake and Tsunami and issues the earthquake news and Tsunami Warnings.	To collect and analysis of agro-met records and issue the agro-met bulletins and news.

DMH is mainly responsible for End to End Early Warning System

Hazard Events and Affected Areas
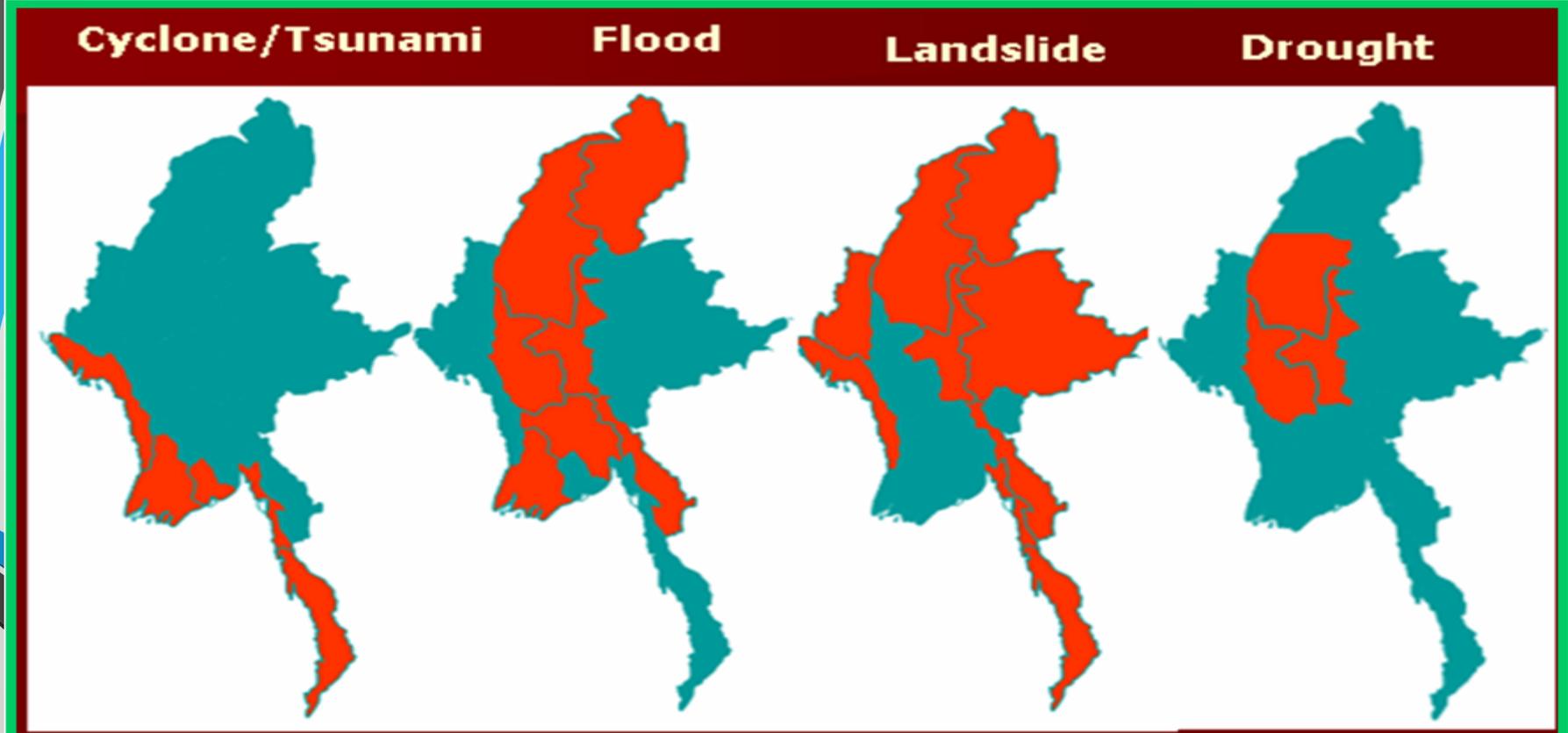
Source: Myanmar National Standing Order for Disaster Prevention

Current Work Flow in DMH
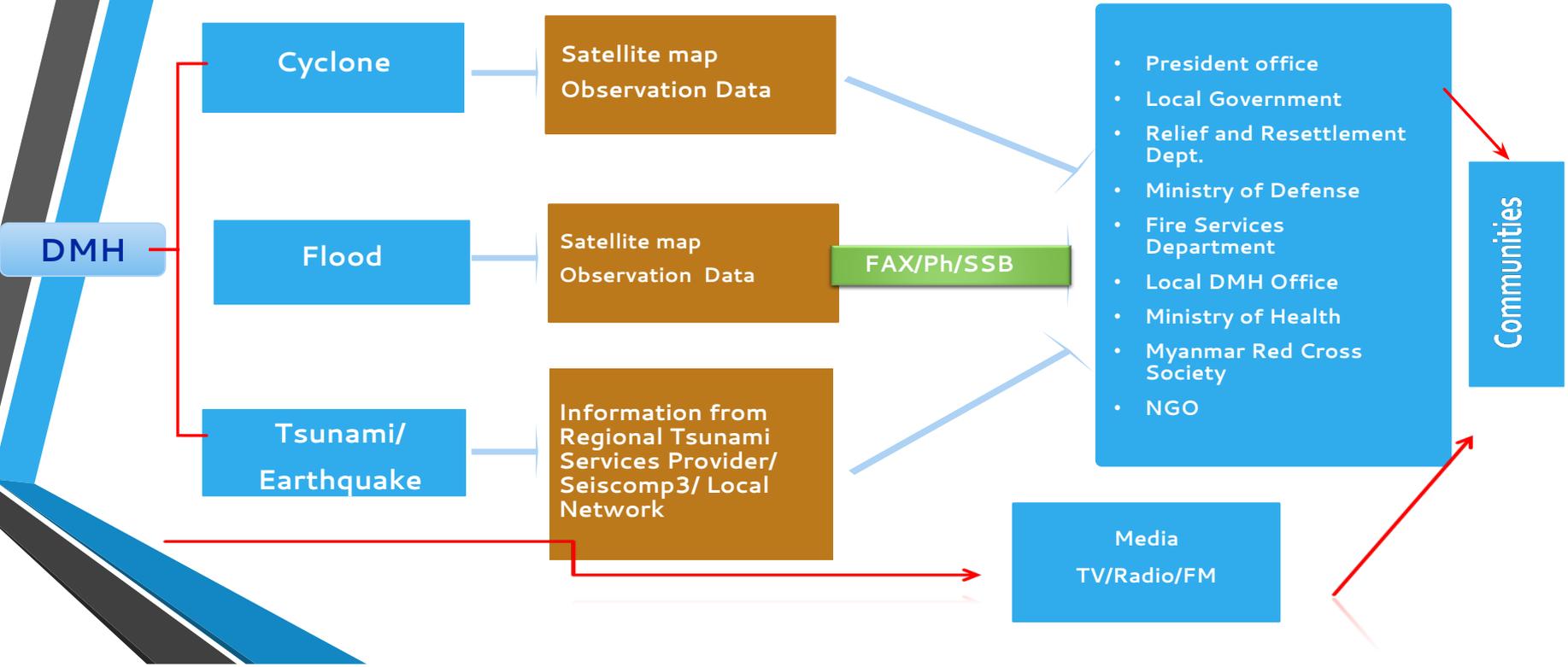
Challenge of Existing EWS in DMH

- Unable to get the real time data because we use SSB, Phone and Fax etc.

- Take too much time to send the alert message by using existing communication system.

  - ❖ Manually somebody need to call each station.

  - ❖ Manually need to send the alert using by Fax, one by one.

- Not reach communities in time.

- Warning message with mostly in "text" format

- Limited availability of hazard and risk maps

Addressing the challenges through SAHANA-SAMBRO

- SAMBRO is very useful tool for dissemination of Warning Alert.

- Alert message issuing by using SAMBRO

  - ❖ Easy to understand

  - ❖ Easy to define the area according to hazard/risk levels

  - ❖ Easy to send alert to different users by one time

- It save the time for warning and bulletin dissemination

- Alerts or early warning can be received in near real time.

- Reduce risk through timely dissemination of alerts/warnings

- Improves the coordination among multi-agencies
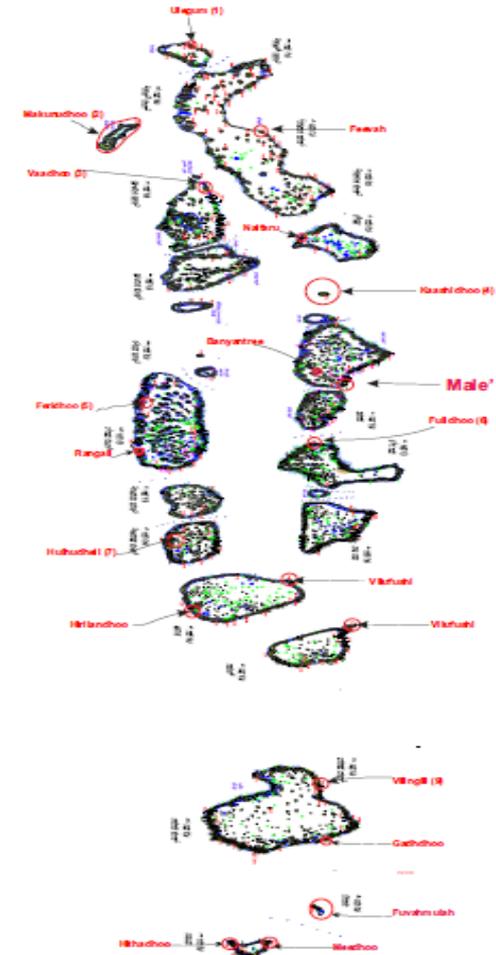
Requirements

➢ We need reliable hazard and risk maps to improve our Alerting and Early Warning System

➢ We need support for developing an incident command system

➢ Our Emergency Operation Center needs a situational awareness reporting system for better coordination

➢ Need to build IT capacity at DMH, Myanmar

Thankyou

MALDIVES

Mr.Abdulla Hafiz (NDMC)
Mr.Abdulla Muaz (MMS)

Country Overview

- Population: 399,393 (2014)
- Division: 1200 coral islands into 26 natural atolls-188 inhabited
- Land area: 298 square kilometers only
- Tourist Resorts: 105
- Highest Natural elevation: 2.4 meters
- Average elevation: 1.5m sea level
- Terrain: Flat, white sandy beaches
- Two monsoons: southwest (rainy) and northeast (dry)
- Main industries: Tourism, fishing, agriculture, construction

Natural Hazards in MALDIVES

Tropical Cyclone

Figure 4.5: Cyclone tracks over Maldives between 1877-2004
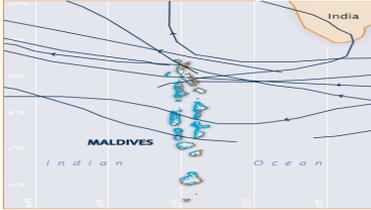
Tornado

Lightning

Tidal Waves

Strong Winds

Tsunami

17 ft. Storm tide

Surge 15 ft.

2 ft. Normal high tide

Mean sea level
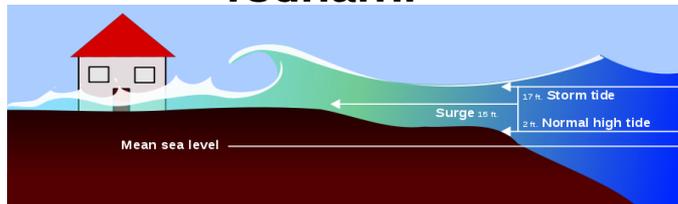
Flash Flood

MALDIVES METEOROLOGICAL SERVICE

Weather advisories and warnings flow chart

Alert Message from Maldives Meteorological Service (MMS)

| TVM Hotline | VOM Hotline | NDMC Hotline | MNDF Hotline | MPS Hotline | LGA/NGO,s SMS |

Pass the message to the public via TV and radio

Pass the message to the concerned Authorities. Take necessary action

Pass the message to the concerned sectors within their responsible organization

Maldives Meteorological Service
Republic of Maldives

National Disaster Management Center (NDMC)

DISASTER MANAGEMENT

COORDI-NATION

PREVENTION

MITIGATION

PREPAREDNESS

COMMAND CONTROL COORD.

EMERGENCY RESPONSE

COORDI-NATION

RECOVERY

BEFORE	DURING	AFTER

NDMC

NATIONAL DISASTER MANAGEMENT CENTRE

Common Incidents 2014-2015
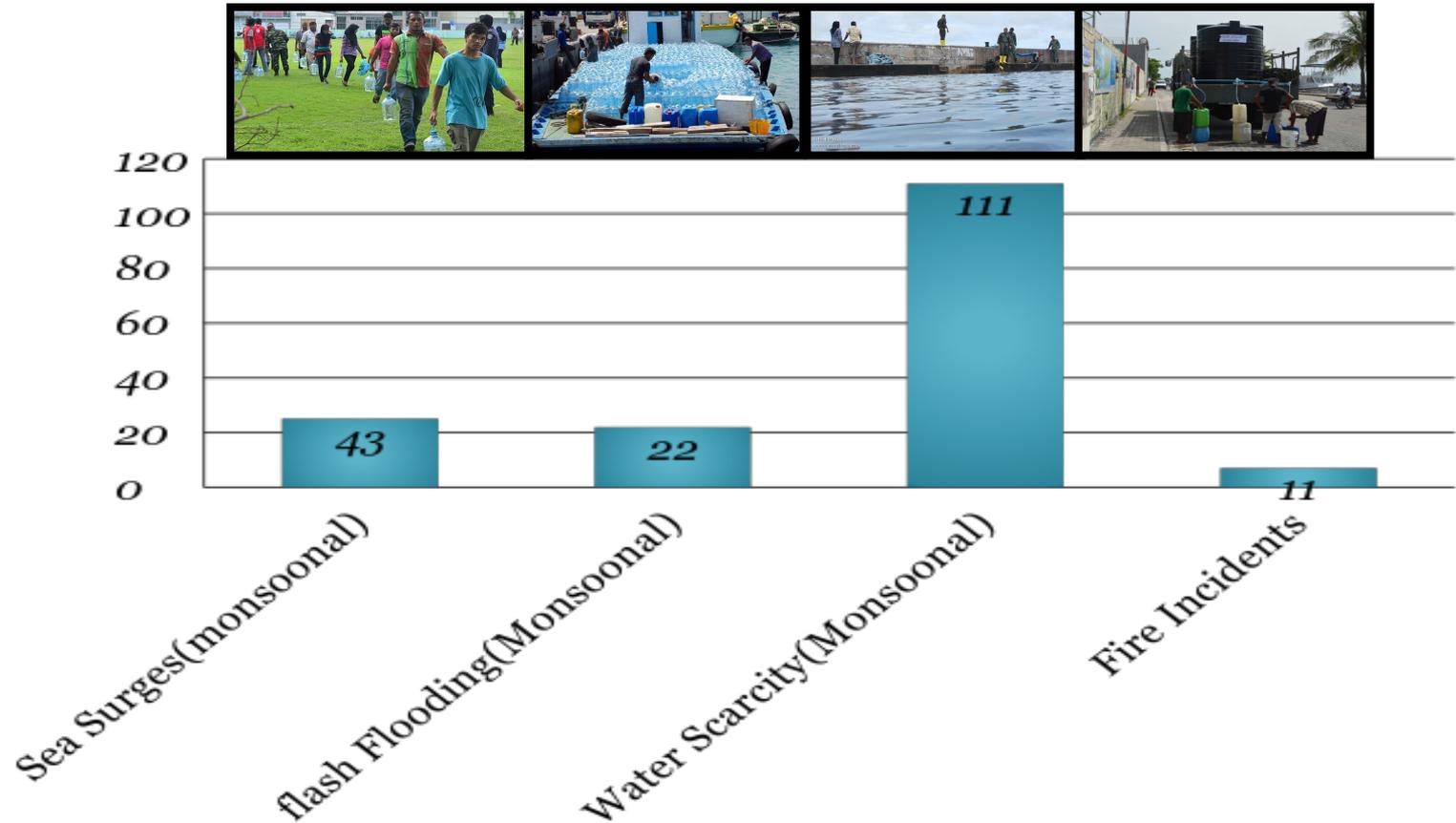
Note: Total 187 incidents of which 176 water related (94.1%)

Current Challenges

- Lack of coordination among agencies;

- Lack of a common knowledge and information systems;

- Lack of mass communication systems;

- Lack of protocols and standards for communications;

- Lack of hazard/risk maps;

- Limited efforts for capacity building;

- Lack of public awareness.

How SAHANA-SAMBRO will help?

- All hazard and all media approach will improve coordination among agencies;

- Interoperability with other systems through use of a common standard (EDXL-CAP) will also help information Exchange and coordination;

- Will build a robust information system by bringing all hazard and risk information to one platform for efficient alerting/early warning;

- Available alerting/early warning templates will make mass communication easy;

- Intuitive GUI will reduce the learning curve and help in capacity building;

- Multi-lingual alerts/early warning will increase the reach & efficacy of the system and improve the public awareness.

Recommendations

1) **Situational awareness system**

   - A situational awareness system will be helpful for for better response.

2) **Incident-based reporting system**

   - Such system will be helpful to know the effectiveness of the alerting/early warning sys. in reducing damage or loss, injuries, deaths etc.

3) **Resource Management System**

   - Managing inventory goods and database of volunteers, experts etc.;
   - Real time tracking and management of resources;

PHILIPPINES

End to End Early Warning Systems

Advantages / Disadvantages of the SAHANA CAP Broker

Gaps and challenges

Way forward (Recommendations)

Mr. Erlinton Antonio B. Olavere*
Mr. Harry V. Alcantara**
Mr. Lester Kim M. Lagrimas**

PHIVOLCS* - Philippine Institute of Volcanology and Seismology
PAGASA* - Philippine Atmospheric, Geophysical and Astronomical Services Administration

PHILIPPINES

PAGASA

Products/Services

- [24-HR public weather forecast](#)
- [Severe Weather Bulletins](#)
- [Shipping Forecasts](#)
- [Gale warning](#)
- [Dam Discharge Warning Information](#)
- General Flood Advisories
- Daily Hydrological Forecasts
- Daily Farm Weather forecasts
- 10-day Regional Agroclimatic Weather

PHIVOLCS

Mandates:

- Predict the occurrence of **volcanic eruptions** and **earthquakes**;
- Generate sufficient data for forecasting volcanic eruptions and earthquakes;
- Mitigate hazards of volcanic activities through appropriate detection, forecast and warning systems; and
- Formulate appropriate disaster-preparedness and mitigation plans.

PHILIPPINES

Philippine settings

How to attain a Multi hazard / multi agency End to End Early Warning System with Common Alerting Protocol"?

NDRRMC operation Center

17 Regions [Regional offices]

81 provinces

1490 Cities/Municipalities

42, 028 Barangays

PHILIPPINES

National Disaster Response Plan (NDRP)

PAGASA

- **Cyclone Track**
- **General Flood Advisory**
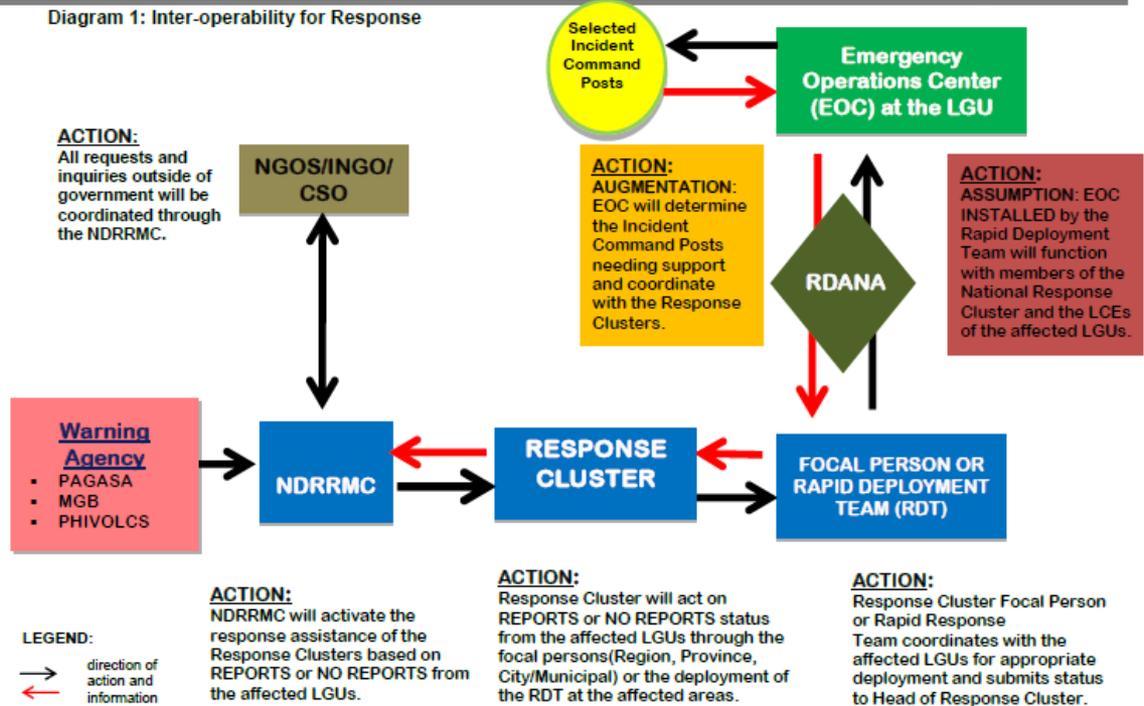- **General Flood Bulletin**

PHIVOLCS

- **Earthquake**
- **Tsunami**
- **Volcano**

National Disaster Response Plan for Hydro-Meteorological Disaster — JUNE014

Diagram 1: Inter-operability for Response

Selected Incident Command Posts

Emergency Operations Center (EOC) at the LGU

NGOS/INGO/CSO

ACTION: All requests and inquiries outside of government will be coordinated through the NDRRMC.

ACTION: AUGMENTATION: EOC will determine the Incident Command Posts needing support and coordinate with the Response Clusters.

ACTION: ASSUMPTION: EOC INSTALLED by the Rapid Deployment Team will function with members of the National Response Cluster and the LCEs of the affected LGUs.

RDANA

Warning Agency
- PAGASA
- MGB
- PHIVOLCS

NDRRMC

RESPONSE CLUSTER

FOCAL PERSON OR RAPID DEPLOYMENT TEAM (RDT)

LEGEND:
→ direction of action and information
→ (red) direction of action and information

ACTION: NDRRMC will activate the response assistance of the Response Clusters based on REPORTS or NO REPORTS from the affected LGUs.

ACTION: Response Cluster will act on REPORTS or NO REPORTS status from the affected LGUs through the focal persons(Region, Province, City/Municipal) or the deployment of the RDT at the affected areas.

ACTION: Response Cluster Focal Person or Rapid Response Team coordinates with the affected LGUs for appropriate deployment and submits status to Head of Response Cluster.

Alert/Early Warning Communication Flow

Advantages / Disadvantages of the SAMBRO

Advantages:

- Multi Hazard/ Multi Agency capable

- Fast transmittal

- Multi-platform

- Incremental cost effective ratio

- Uses Standard Protocol

- Flexible

- Scalable

- Systematic Approach

Disadvantages:

- Non-availability of internet connection in remote areas

- Power/link disruption in time of disaster

Gaps/Challenges

- Adaptation of other agencies / users to the systems.

- Training of staffs from top to bottom on how to use CAP.

- Producing output of our existing system (bulletins & warnings in PDF) and a CAP will require time.

- Creating a consensus on scales based on existing and new CAP scales.

- Integration of existing technology to SAMBRO (i.e. Tsunami Warning Sirens, Flood Warning Sirens)

- Sustainability

Recommendations

- SAMBRO notification for expiring alerts.

- Implement Markdown for styling the messages.

- Implement Public Key Infrastructure (PKI) between sender & receiver.

- A Content Management System (CMS) for Geocoding thru Shapefiles.

- Exporting CAP Alerts to a report, like existing bulletins, warnings (PDF).

- Policy to create CAP within a timeframe of an identified alert.