Water-related Disasters: Disaster Risk Reduction Efforts in the Philippines

World Bosai Forum
ICHARM – PLATFORM ON WATERS AND DISASTERS
November 28, 2017

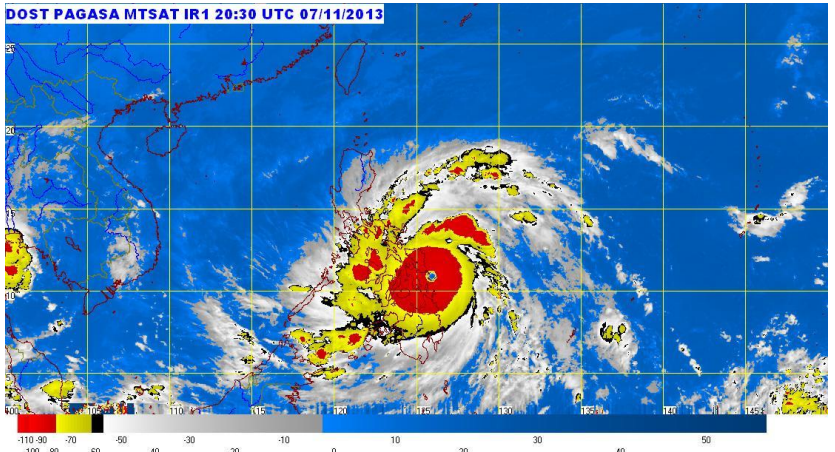
Renato U. Solidum, Jr.
Undersecretary, Department of Science and Technology
Officer-in-charge, Philippine Institute of Volcanology and Seismology
Commissioner, UNESCO National Commission

Hydro-Meteorological Hazards

- An average of 20 tropical cyclones affects the country annually

- These are accompanied by heavy rains and strong winds that may produce **floods**, **landslides** and **storm surges**

- Other weather systems bring rains



Typhoon Yolanda, 2013 (Y
It Happened)

Recent Hydro-Meteorological Disasters

GUINSAUGON LANDSLIDE
February 17, 2006

Flooding in Metro Manila: Tropical Storm Ketsana"ONDOY" Sept. 24 - 27, 2009

TS Sendong December 15 to 17, 2011

Super Typhoon "Yolanda" (Haiyan)

Key Actions for DRRM

- **Know Hazards and Risks**
  <- Hazard and Risk Assessment
- **Monitor**
  <- Monitoring
- **Warn and Disseminate Information**
  <- Risk Communicationi
- **Respond Appropriately and Timely at various levels**
  <- Preparedness, Mitigation, Response, Recovery

ORGANIZATIONS INVOLVED IN NATURAL HAZARDS AND RISK ASSESSMENT

Department of Science and Technology (DOST)

PHIVOLCS– *earthquake, tsunami and volcano-related hazards and scenarios*

PAGASA– *flood and storm surge hazard; climate change scenarios*

Department of Environment and Natural Resources (DENR)

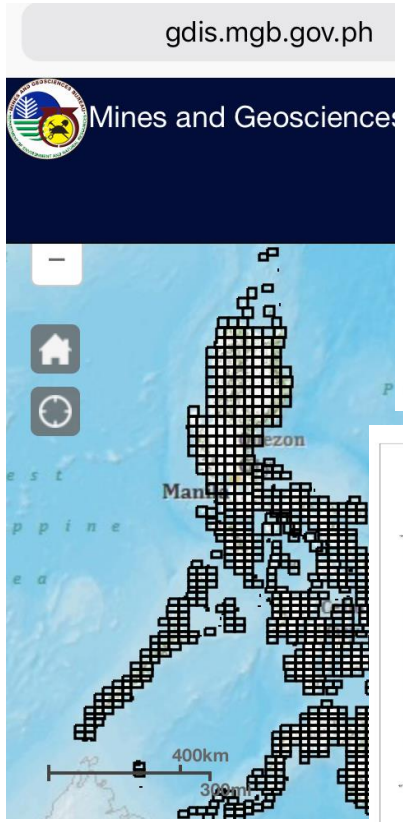
MGB – *flood and landslide*

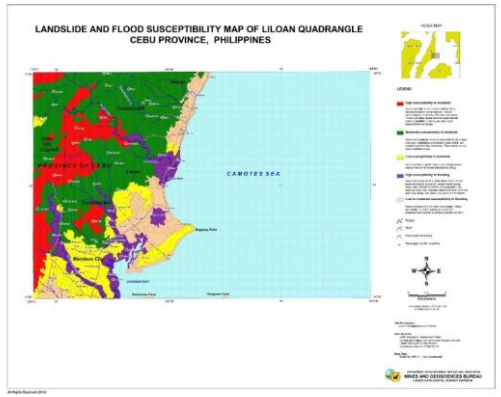
NAMRIA – *aerial photography and remote sensing, topographic base mapping, geoportal development*

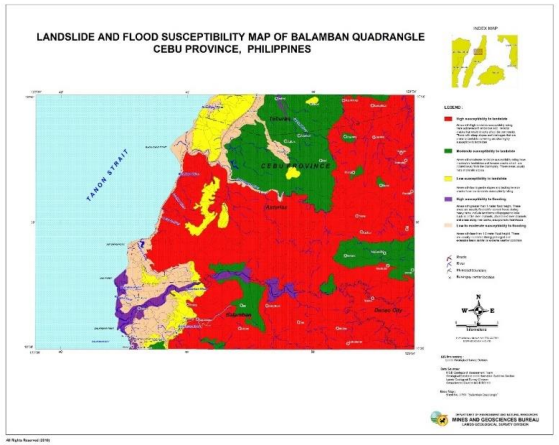
Academe

*DOST funded projects: DREAM-LiDAR (LiDAR topography, flood hazards; NOAH (*rain-triggered landslide, storm surge)*

Hydro-meteorological Hazards Maps

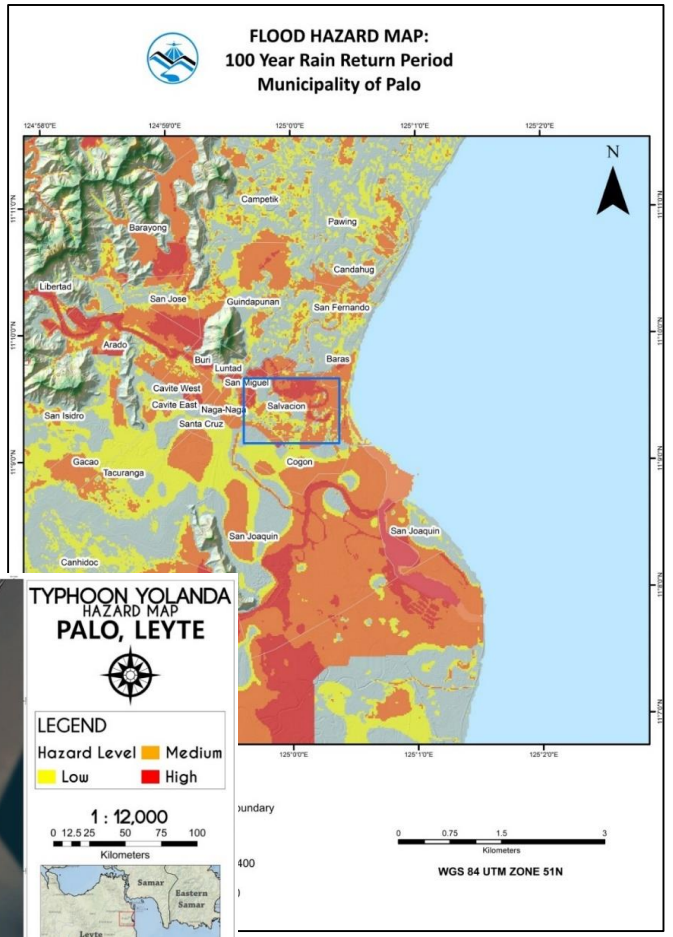


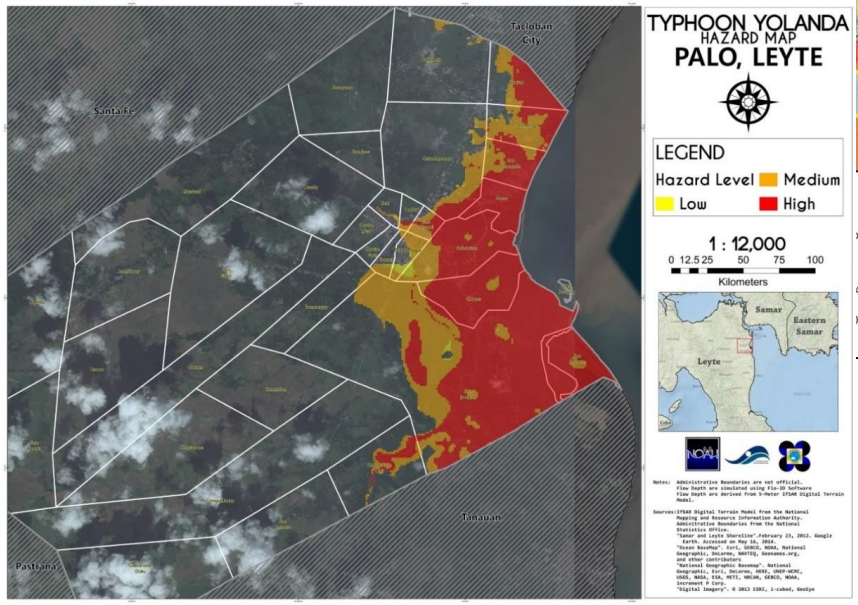




- Mines and Geosciences Bureau - Landslides and Flood mapped at 1:50,000 to 1:10,000 scales.

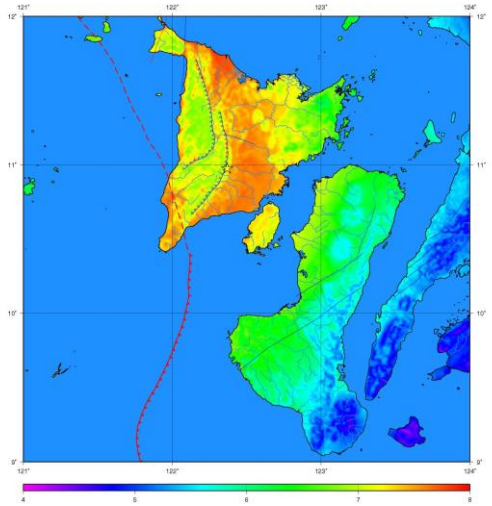
- DOST Project NOAH – LIDAR , flood,and storm surge hazard maps





DEVELOPMENT OF RISK ASSESSMENT TOOL

REDAS by DOST-PHIVOLCS

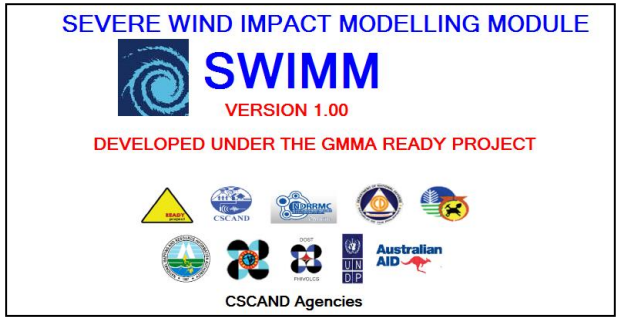


Hazard Assessment Module

Earthquake Impact Assessment Module

Flood Loss Assessment Tool

Exposure Data Module



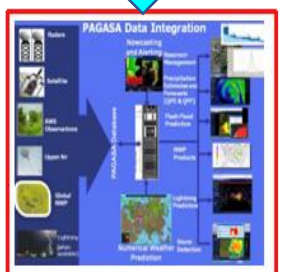
Severe Wind Impact Modelling Module

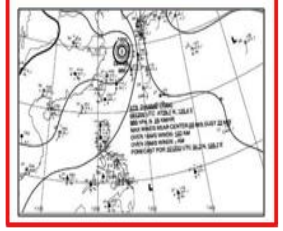
Weather Monitoring by PAGASA

24/7 WEATHER OBSERVATION & TRANSMISSION

- Field Stations
- Upper-air Stations
- Doppler Radars
- Wind Profiler
- Automatic Stations
- Met. Buoys
- Airport Stations
- Met. Satellites

PROCESSING AND ANALYSES





FORECAST AND WARNING PREPARATIION

1. **Public weather forecasts**
2. **Shipping forecast**
3. **Weather Bulletins**
   a) Weather Advisory
   b) Tropical Cyclone Alert
   c) Tropical Cyclone Warning
   d) Tropical Cyclone Warning for Shipping
4. **Gale Warning**
5. **Rainfall Warning**

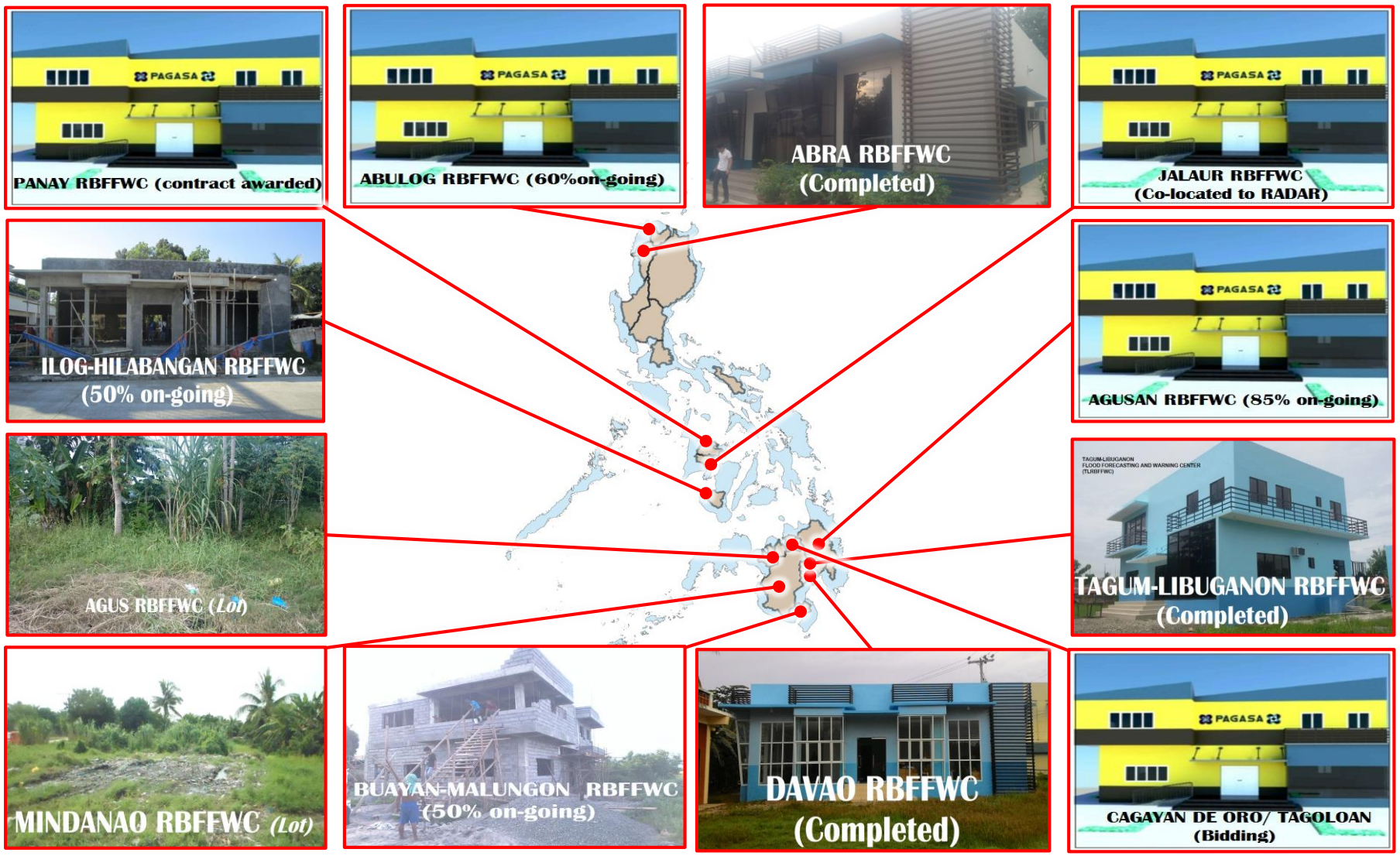
DISSEMINATION TO END-USERS

- OCD/ NDRRMC
- MEDIA/ PRESS CON

RESPONSE/ ACTION

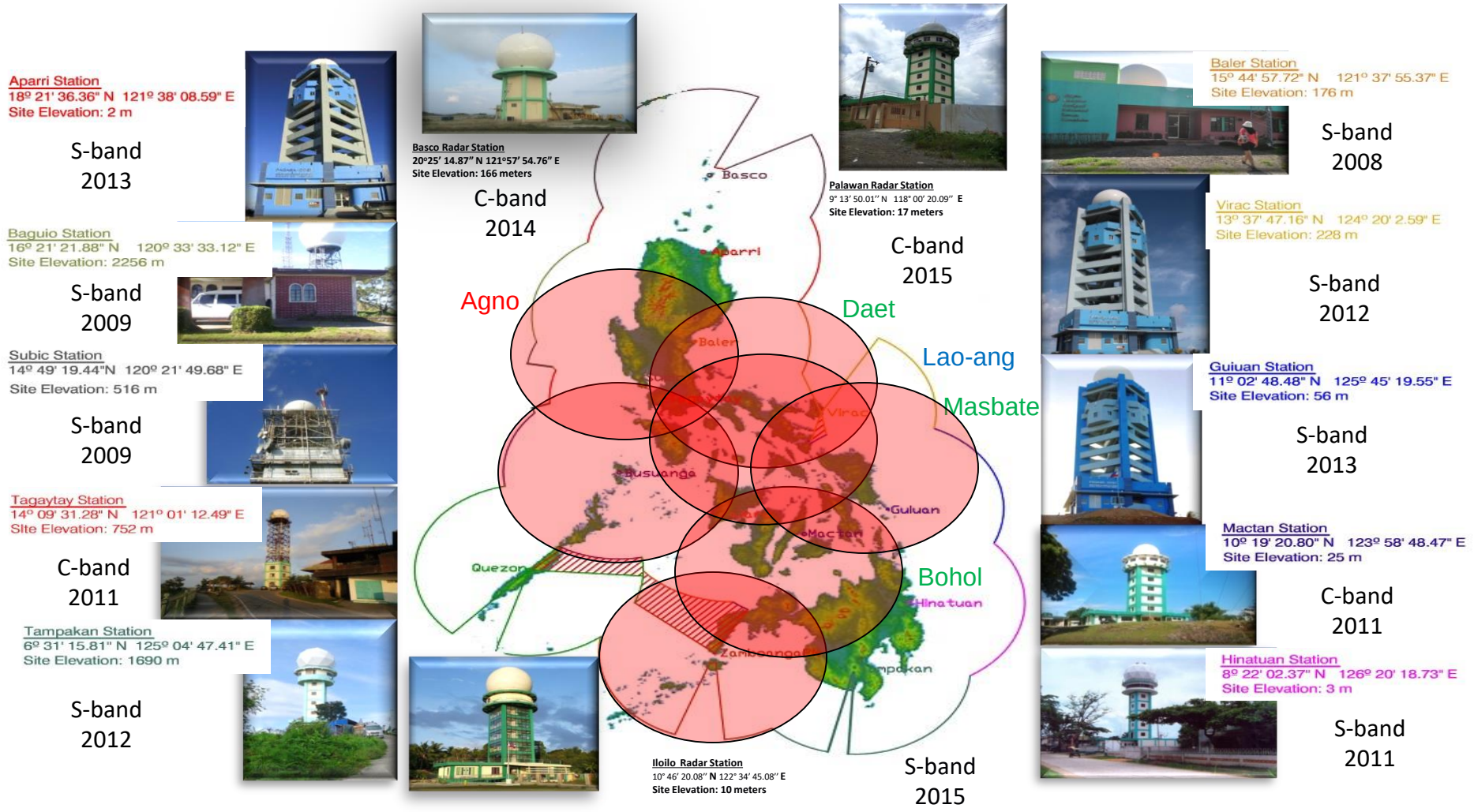
MAJOR RIVER BASINS AND DAMS

Establishment of Additional Flood Forecasting Warning Centers



PAGASA RADARS PROJECT

20 OPERATIONAL RADARS BY 2020 + 6 XBAND RADAR FOR FFWS



COMMUNITY-BASED FLOOD EARLY WARNING SYSTEMS

Information, Education, and Communication (IEC) Campaign CBFEWS Operations and Warning Protocol Training & Flood Drill

"Deployment of Early Warning System (DEWS) in Disaster-Prone Areas"
(DOST-GIA Project)

WAYS FORWARD FOR DOST-PAGASA

1. Development of Operational Flood Forecasting and Warning Models
2. Integration of RADAR Products to the Operational Flood Forecasting and Warning Models
3. Development of Flash Flood Forecasting and Warning Models
4. Development of Rain Induced Landslide (RIL) Warning System
5. Continue Hazards and Risk Assessment
6. Continue Community Based Awareness and Preparedness