

# Advancing Government Innovation and Leveraging Frontier Technologies for DRR and Building Resilience

*Session: “Data and Digital Government for DRR  
and Building Resilience”*

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## DIGITALIZED DISASTER RISK REDUCTION SERVICES TOWARDS BUILDING NATIONAL RESILIENCE: THE CASE OF THE NATIONWIDE OPERATIONAL ASSESSMENT OF HAZARDS (NOAH)\*

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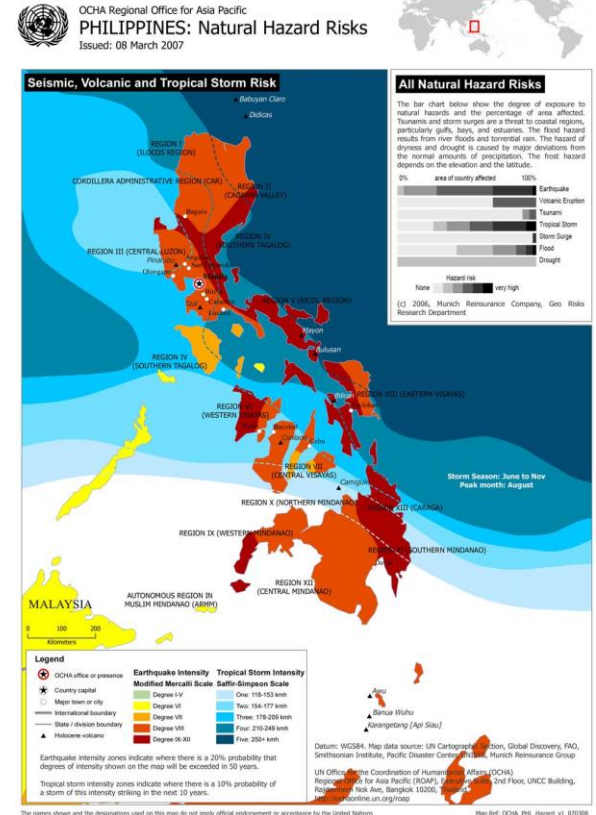
# OUTLINE

- A. Disasters in the Philippines
- B. Case study on NOAH
- C. Conclusions

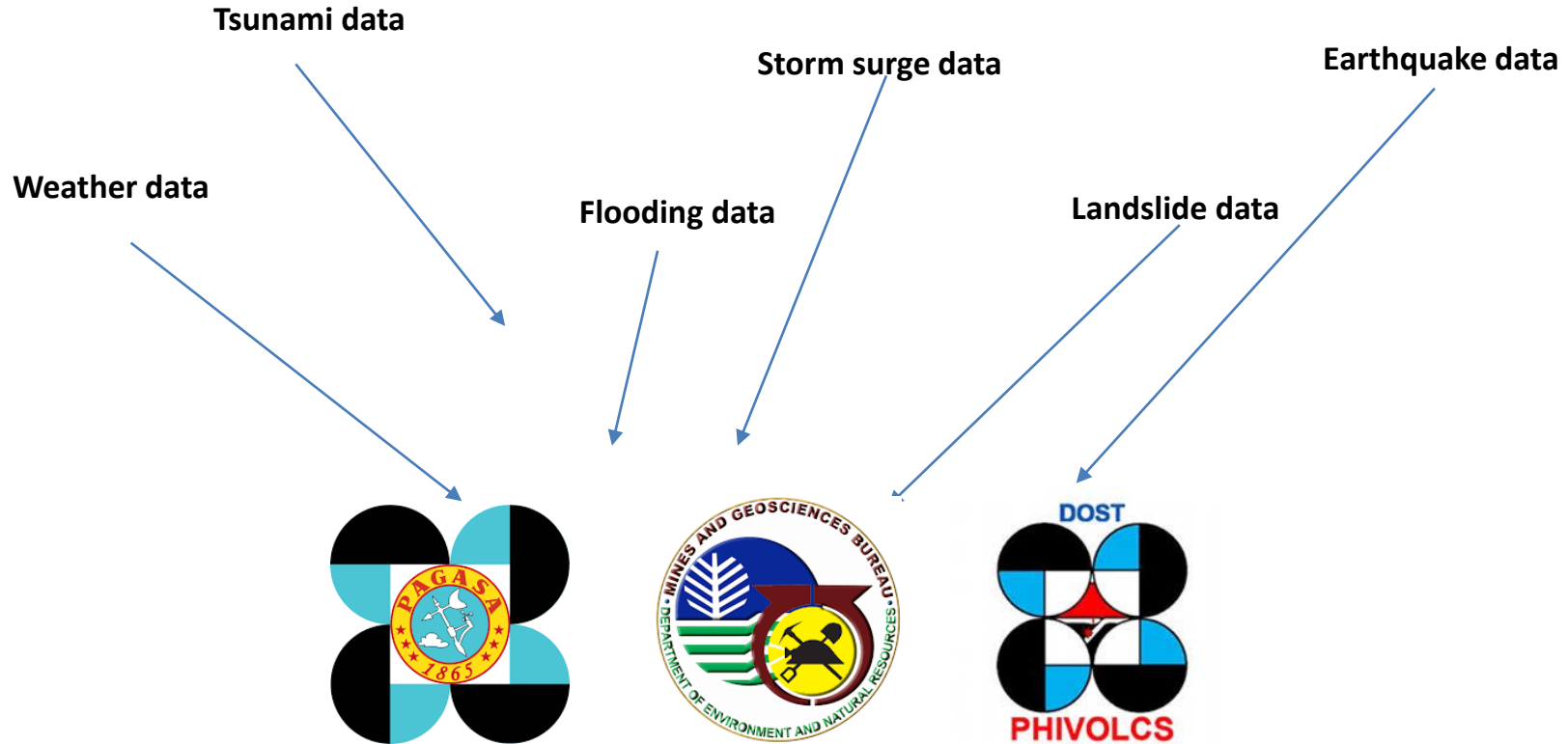


# PROBLEM

- The Philippines is prone to weather-related and other natural geological events, mainly due to its location
- Every year, there are hundreds of casualties and injuries aside from billions of money of loss and damages due to ill preparations for natural disasters
- There is lack of awareness on extreme natural hazards events and their disastrous effects



# DISASTER PREVENTION AND PREPARATION ADVISORY FROM FORECASTING AGENCIES





# Project NOAH (Nationwide Operational Assessment of Hazards)

- In response to the devastations caused by Typhoon Sendong/Washi which hit southern Philippines in December 2011 and previous disasters
- Created and launched by the Department of Science and Technology (DOST) on 6 July 2012
- The flagship program on disaster prevention and mitigation by then President Benigno S. Aquino III (2010-2016)
- Supported by DRR-related national government agencies, local governments, business establishments, media, NGOs, foreign governments, and international financing institution.



# OBJECTIVES



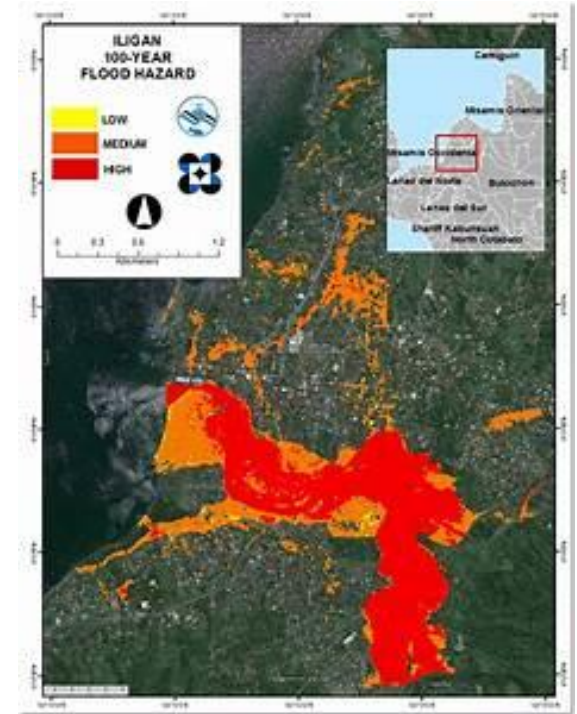
- To provide more accurate, integrated, and responsive disaster prevention and mitigation system, especially in high-risk areas throughout the Philippines.
- To harness technologies and management services for disaster risk reduction activities offered by DRRM-related national government agencies, in partnership with institutes from the University of the Philippines.

# 8 COMPONENT PARTS OF “PROJECT NOAH”

1. ***Landslide Sensors Development Project*** - Involved the development and deployment of landslide sensors and data communication systems that comprise early warning systems for deep-seated landslide hazards.
2. ***Coastal Hazards and Storm Surge Assessment and Mitigation (CHASSAM)*** - enabled PAGASA to deliver a more accurate and timely forecast through the updated storm surge models and generation of storm surge inundation maps of all the coastal provinces in the country.
3. ***Flood Information Network (FloodNet)*** - aimed to provide an upgraded version of ClimateX computer models for critical river basins and fully automate the data gathering. This has produced more accurate radar calibration and 94.16% accurate ClimateX Percent Chance of Rain calculation.
4. ***Weather Information Integration for System Enhancement (WISE)*** - provided a 7-day forecast at 12 km resolution and 4-day forecast at 4 km resolution by enhancing the agency's Numerical Weather Prediction and development of forecast accuracy validation protocols.
5. ***Disaster Management Using Web-GIS*** - the creation of various featured layers in the NOAH website for easier access of users. These layers are Weather, Sensors, Flood, Landslides, Storm Surge, WebSAFE, and MOSES.
6. ***Weather Sensors*** - aimed at providing accurate early warning forecasts. Developed different weather sensors, i.e., Hybrid Weather Monitoring System and Production of Weather and Rain Automated Stations (HYBRID); Hydro-meteorological Devices (HYDROMET); and Deployment of Early Warning Systems (DEWS).
7. ***Strategic Communication Intervention*** - conducted Information, Education and Communications (IEC) for the different audiences of Project NOAH. Through information dissemination, it is aimed to prevent massive casualties and minimize loss of properties.
8. ***Disaster Risk and Exposure Assessment for Mitigation (DREAM)*** - science and technology and social science were integrated to produce a proactive disaster preparedness planning and response. It used cutting-edge technologies such as light detection and ranging (LiDAR) and airborne radar interferometry to produce topographic datasets to assist in disaster forecasting.

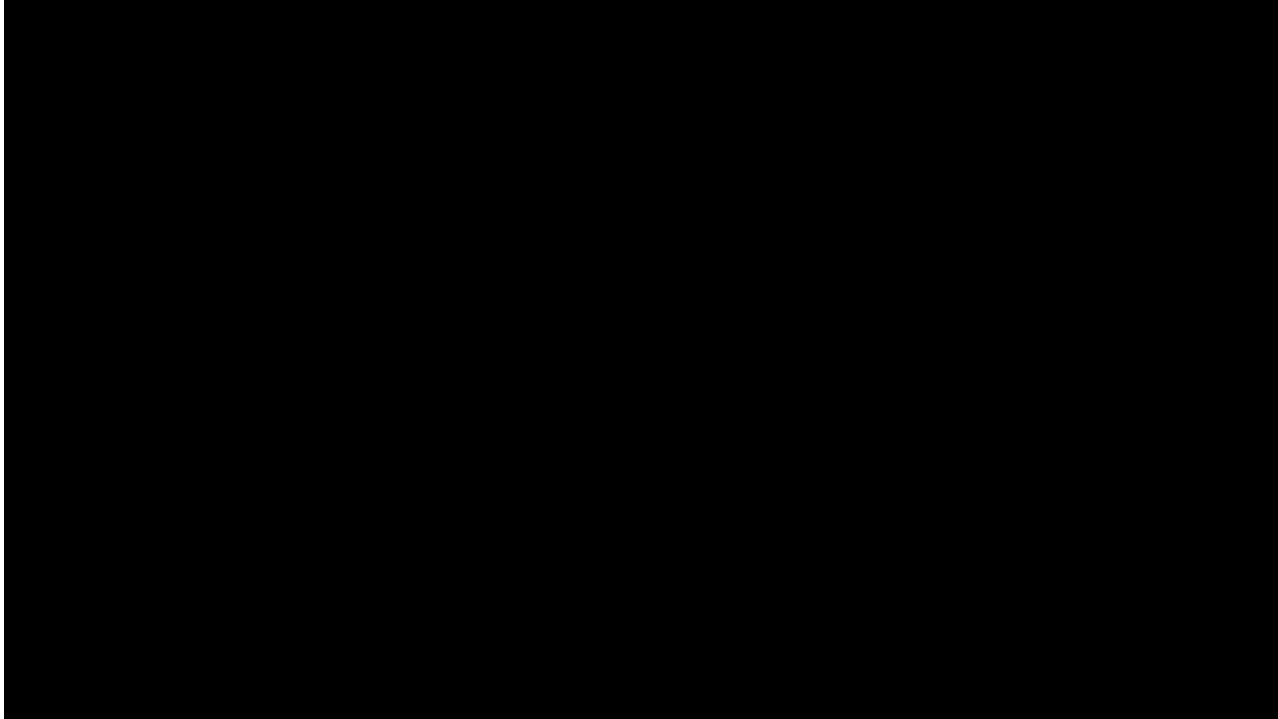
# TOTAL HAZARD MAP OUTPUTS OF PROJECT NOAH, 2016

- Enhanced Landslide Hazard Maps for 81 provinces, Metro Manila, and Zamboanga City
- Multi-Hazard Maps of 28 disaster-prone provinces
- 1:10,000 Scale Geo-Hazard Maps for all 1,634 cities and municipalities
- Light Detection and Ranging (LiDAR) Maps of the 18 major river systems and four critical areas
- Storm Surge Maps for all 66 vulnerable provinces and Metro Manila
- Multi-Hazard Maps of the Greater Manila Area

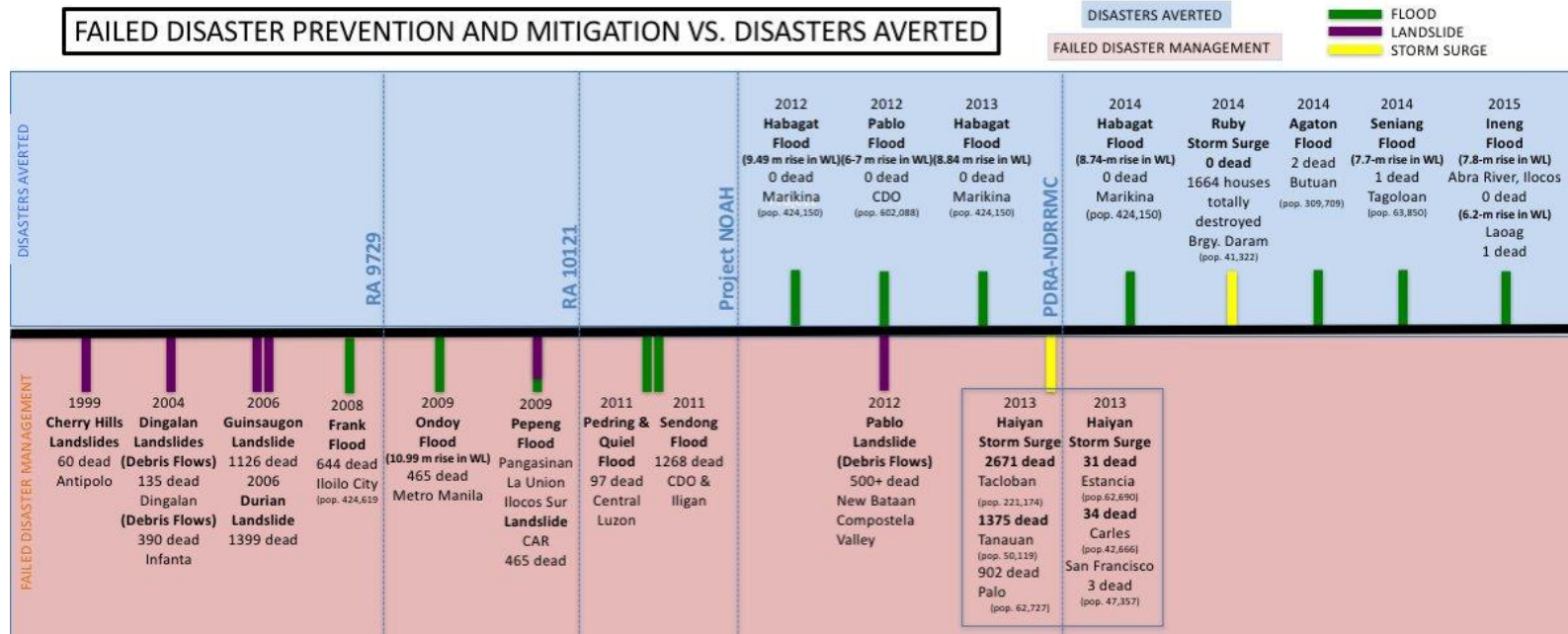




# PROJECT NOAH'S EARLY WARNING SYSTEM



# Timeline of averted potential disasters vs. failed disaster management: 1999-2015





# LIST OF AWARDS RECEIVED BY “PROJECT NOAH”

- **International**

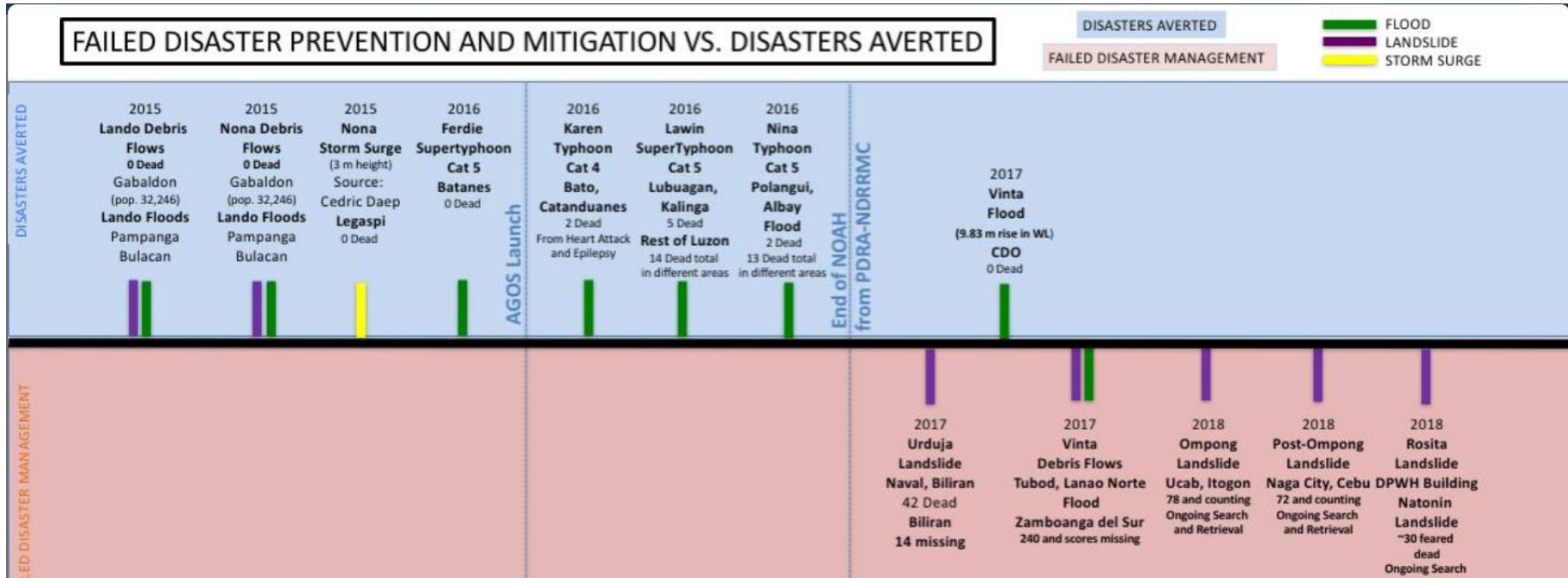
1. Top Smart City Initiative in Public Safety at the Smart City Asia Pacific Awards, 2016, from the International Data Corporation Asia Pacific
2. Harnessing Data for Resilience Recognition Award, 2016, from the Harnessing the Data Revolution for Resilience Summit
3. Silver Prize in the Corporate Social Responsibility category, 2015, from the 2015 ASEAN ICT Awards
4. UN World Summit Awards Mobile Content, 2014
5. Geospatial World Excellence in Policy Implementation Award, 2014
6. Asia Geospatial Excellence Award, 2013, from Asia Geospatial Forum 2013

- **Local**

1. Special Award, 2016, from the University of the Philippines
2. Best Telecom Project, 2016, from the 16th Telecom Asia Awards
3. Best Philippine-made Mobile Application of the Year, 2015, from the International ICT Awards Manila
4. 2015 Gawad Parangal Awards from the Quezon City government
5. Best Mobile App, 2013, from the FutureGov Awards
6. Anvil Award of Excellence, 2013, from the 48th Anvil Awards
7. IT Product of the Year, 2012, from the Cyberpress Awards
8. Digital Heroes Awards, 2012, from the Media Digital Heroes Awards

Source: UP-NOAH Center, n.d.

# Timeline of averted potential disasters vs. failed disaster management: 2015-2018

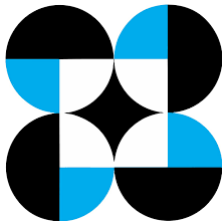
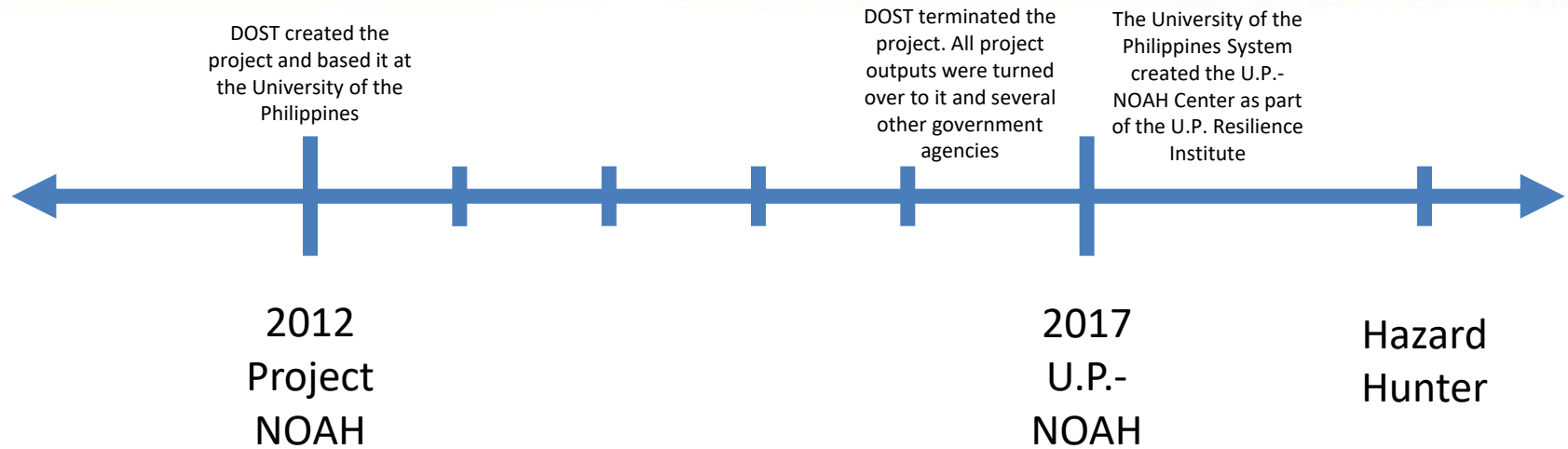


Source: Lagmay, 2019

The mass casualties from 2017 onwards happened due to the shift from “hazard-specific, area-focused and time-bound warnings” to “general warnings.” – Lagmay, 2019



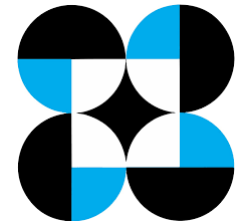
# TIMELINE OF TRANSITION: FROM “PROJECT NOAH” TO “UP-NOAH”



Department of Science and Technology



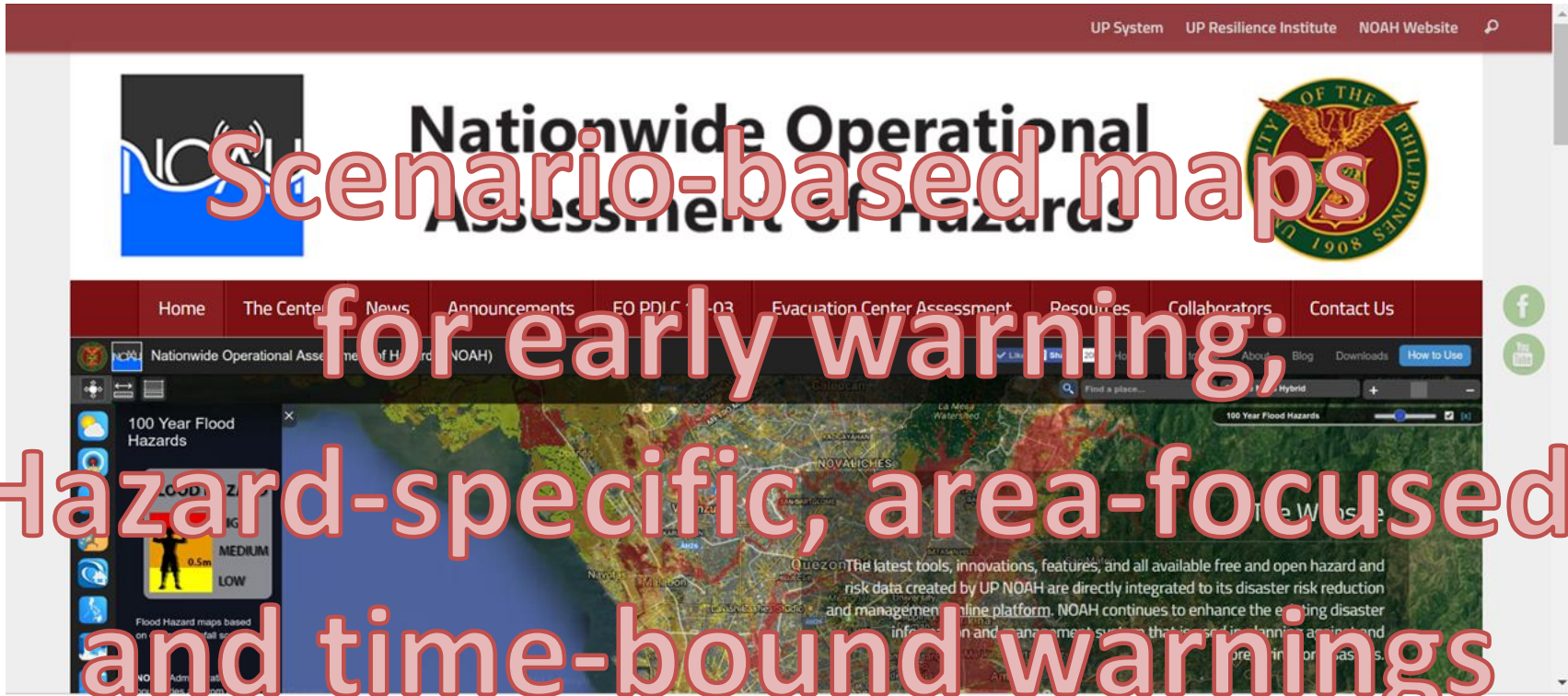
University of the Philippines System



Department of Science and Technology

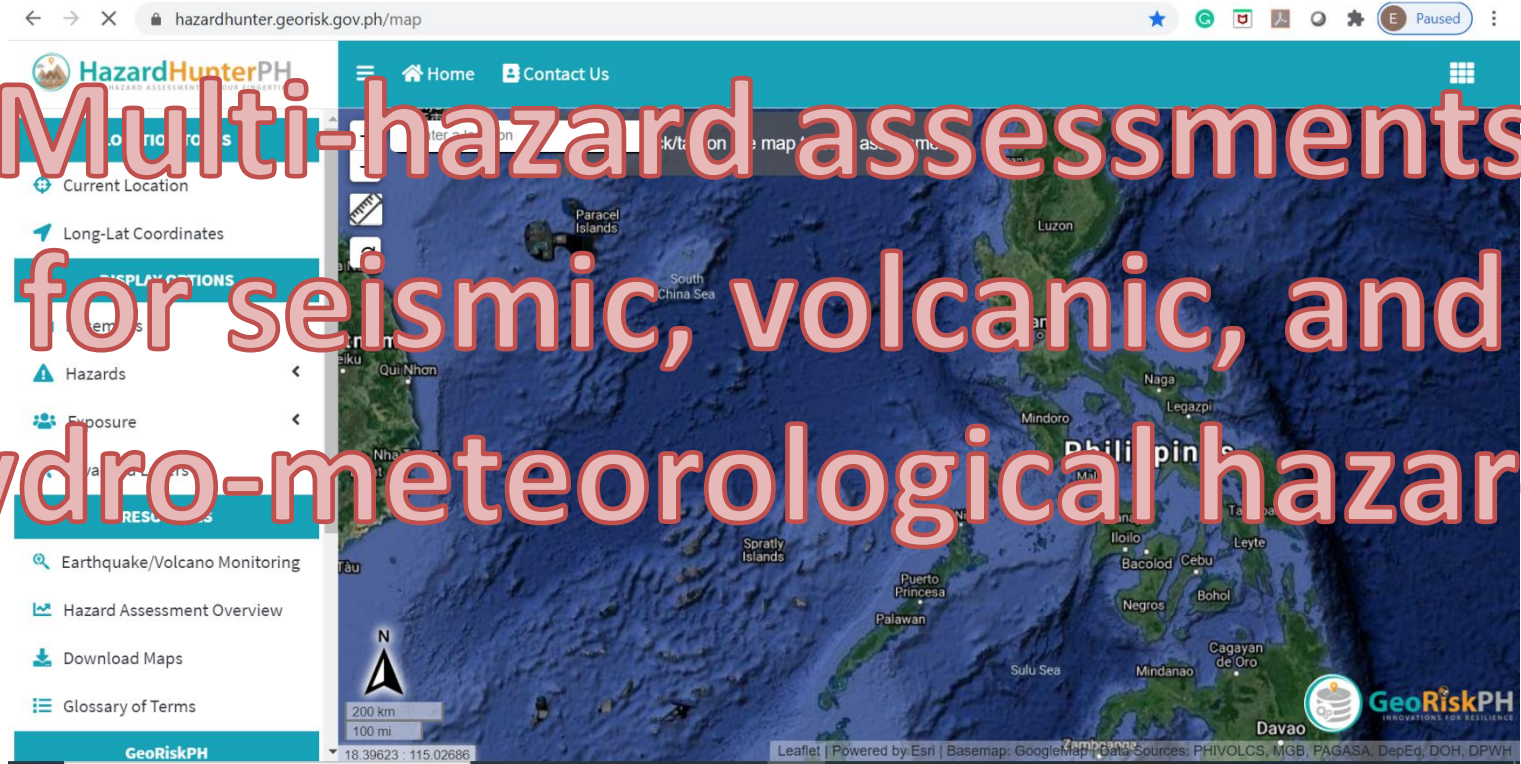
U.P. NOAH

Scenario-based maps  
for early warning;  
Hazard-specific, area-focused,  
and time-bound warnings



# Hazard Hunter

Multi-hazard assessments  
for seismic, volcanic, and  
hydro-meteorological hazards





Industry 4.0

- Digitization, digitalization, and big data analytics offer opportunities to innovate in disaster risk reduction (DRR)
- In this case study, it has been shown that they enabled people to prevent, prepare for, and response to potential disasters.
- Commensurate institutional reforms in the bureaucracy must be established so that the full potentials of digitalized DRR could be harnessed towards building a resilient country.



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