

South China Sea Region Tsunami Ready Training Course (Online)
22-23 December 2025

National Tsunami Programme in the Philippines

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Department of Science and Technology (DOST)



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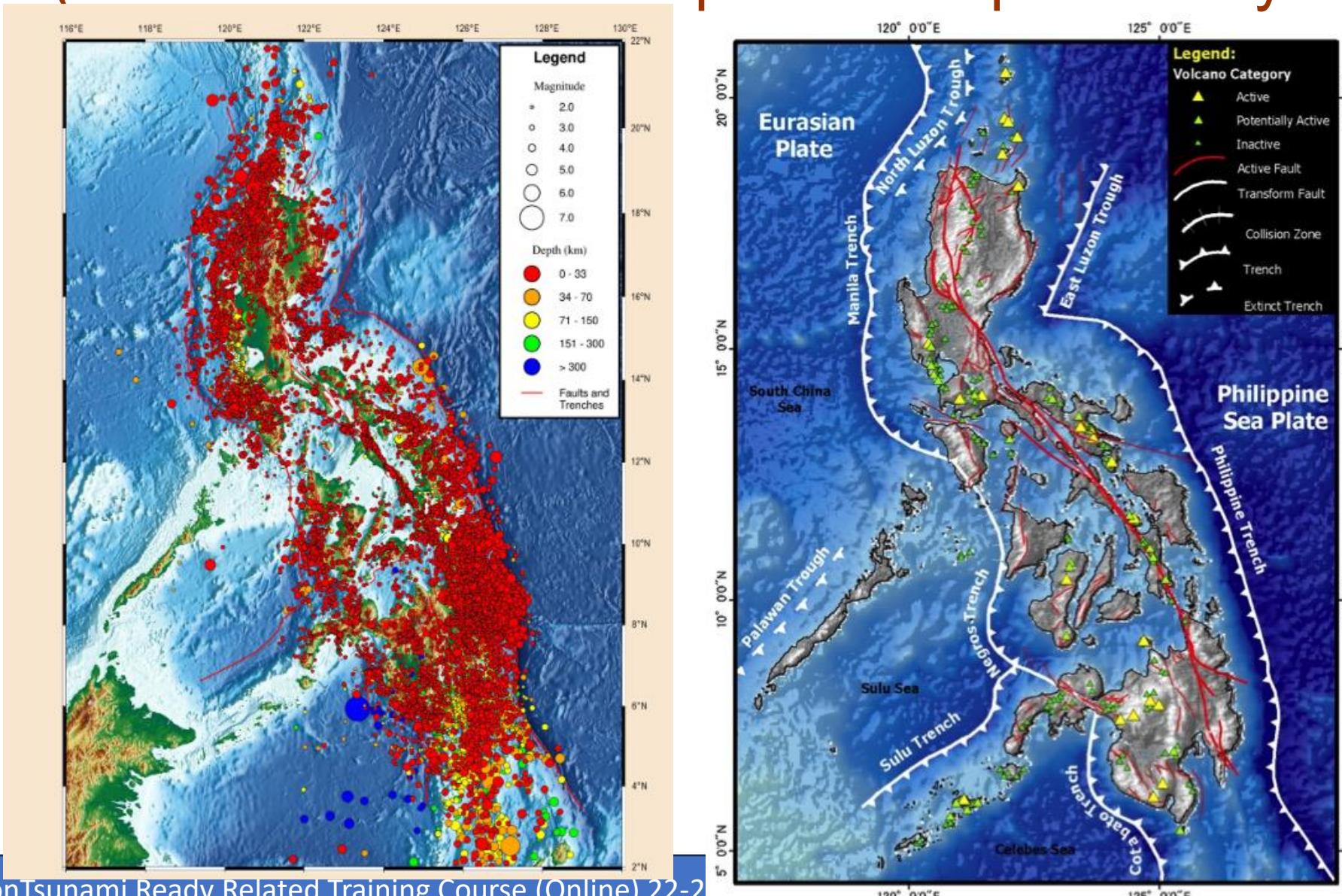
Focus on earthquakes, tsunamis, volcanic eruptions and related phenomena (ex. landslides)

- Monitoring and warning
- Hazards and risk assessment
- Evaluation of earthquake and volcano eruption potential
- Public awareness, community preparedness, disaster risk reduction

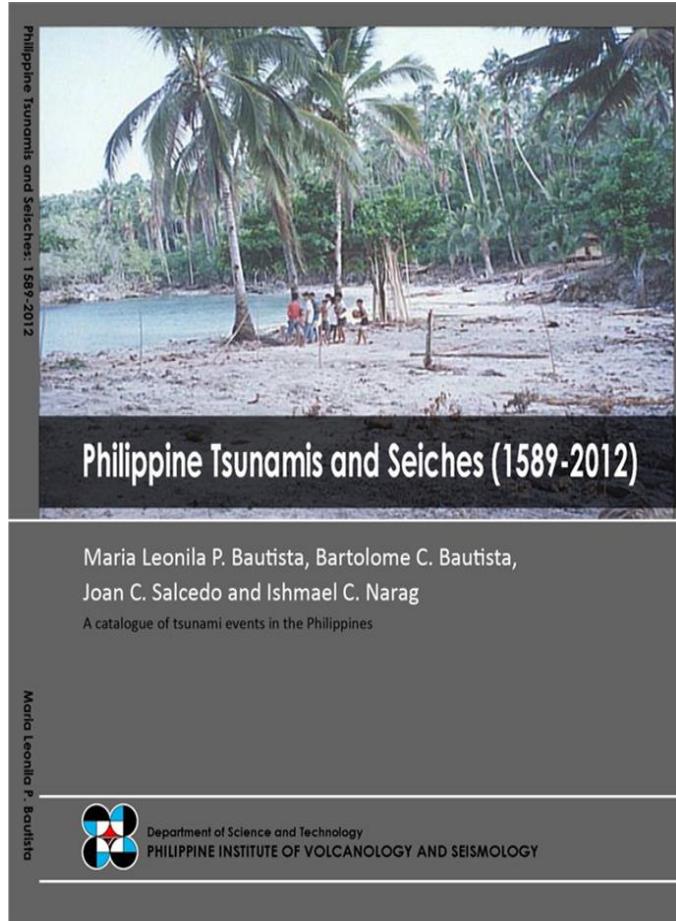


Earthquake Activity in the Philippines

(~90 destructive earthquakes for past 400 years)

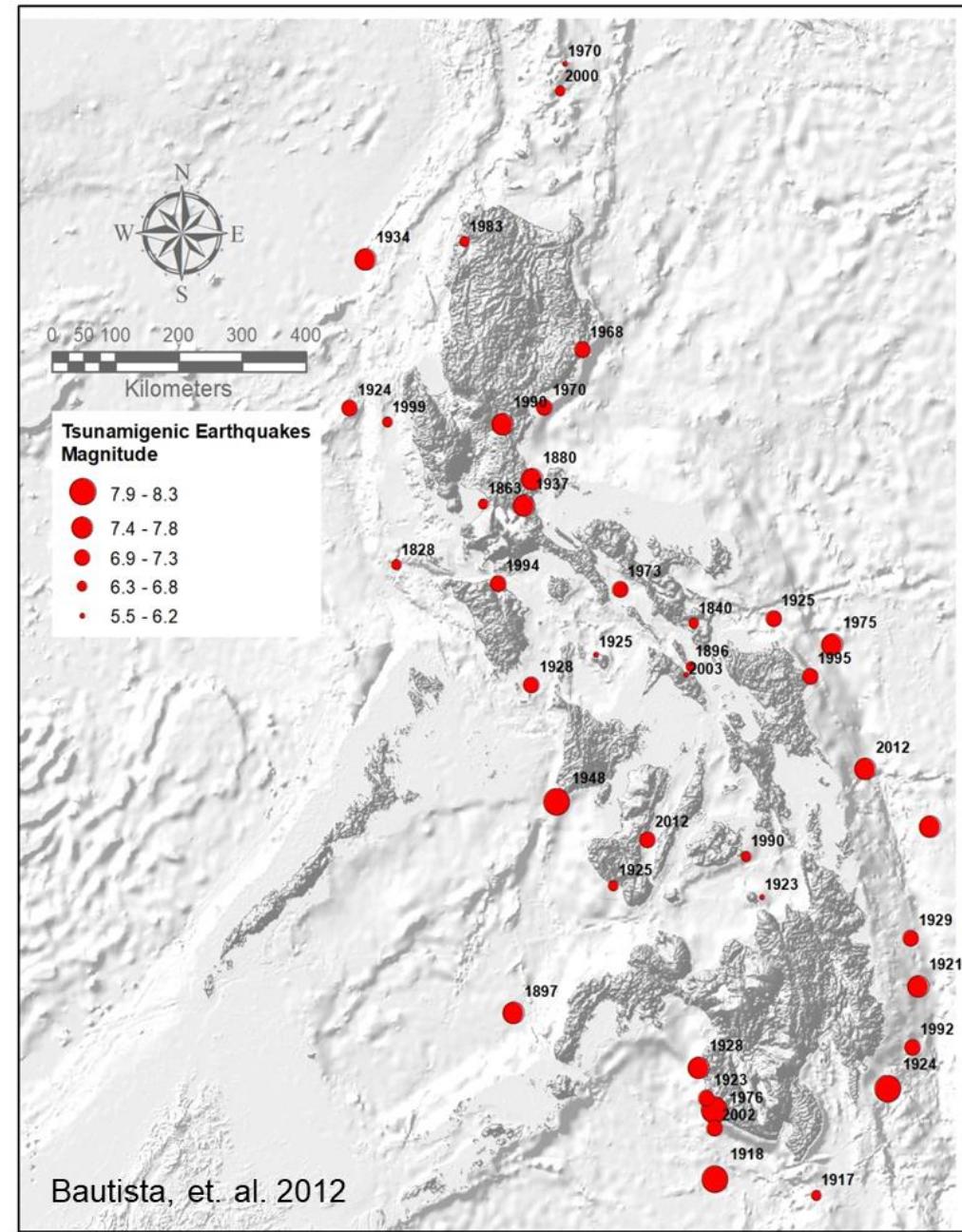


Historical Tsunami in the Philippines



<https://www.phivolcs.dost.gov.ph/index.php/publications/books/tsunami-and-seiches>

- 41 confirmed tsunami events based on historical accounts and earthquake events catalogues from 1828 to 2012



Societal Outcome: Communities have achieved resilience to volcanic eruptions, earthquakes, tsunamis, and other related hazards. **2023-2028**

Enhanced safety of communities

1. Accurately predicted and simulated geological phenomena
2. Provided highly accurate and timely warning & information
3. Developed cost-effective monitoring & warning system
4. Empowered partners to lead in reducing risks from geologic hazards down to the barangay level
5. Enhanced collaboration with stakeholders

Highly responsive and competent organization

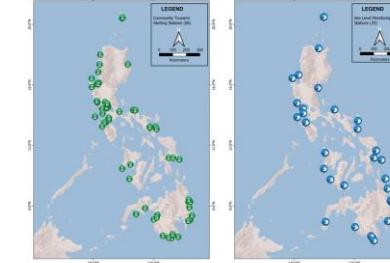
1. Highly prominent, globally recognized experts
2. Motivated, rewarded and competent staff
3. Effective and efficient systems, procedures, structures
4. Inspiring, dynamic leadership

1. National Volcano Monitoring & Warning (NVMW)
2. National Earthquake Monitoring and Information (NEMI)
3. National Tsunami Monitoring and Early Warning (NTMEW)
4. Earthquake Hazards Assessment and Research and Development (EHARD)
5. Volcanic Hazards Assessment and R&D (VHARD)
6. PHIVOLCS Risk Information Management Assessment (PRIMA)
7. Landslide Monitoring, Early Warning and Risk Assessment (LMEWRA)
8. Volcano, Earthquake, and Tsunami Disaster Preparedness and Risk Reduction (VETDPRR)
9. Leadership Enhancement and Development (LEAD)
10. Strategic Human Resource Mgmt. & Dev't. (SHRMD)
11. Strategic Performance Assessment & Development for Excellence (SPADE)
12. Strategic ICT Management and Development (StrICT)
13. Financial Management and Administrative Support (FMAS)

Various activities and projects contributing to Earthquake and Tsunami Program

- **Earthquake and Tsunami Monitoring**
- **Tsunami Warning and Dissemination**
- **Tsunami Hazard Mapping**
- **Community Capacity Building/Community-based Tsunami Early Warning**
- **Tsunami Information Materials**
- **Tsunami Information Dissemination for Preparedness and Awareness Promotion**

1. EARTHQUAKE MONITORING and TSUNAMI WARNING



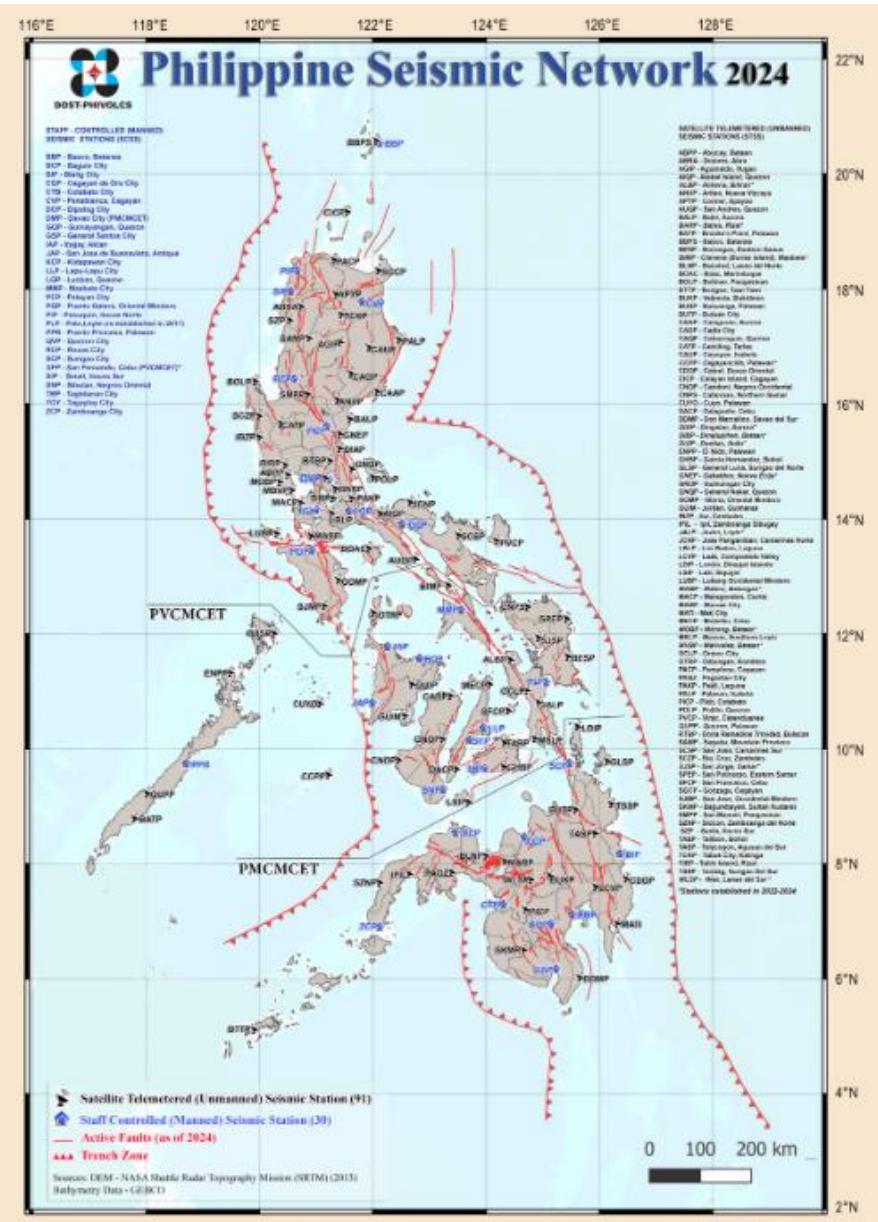
Seismic
Network
Development

Management
and Operation
of Seismic
Stations

Seismic and
Tsunami Data
Management

Management,
Operations and
Implementation
of Systems for
Tsunami
Monitoring and
Warning
(MOIST)

EARTHQUAKE MONITORING NETWORK



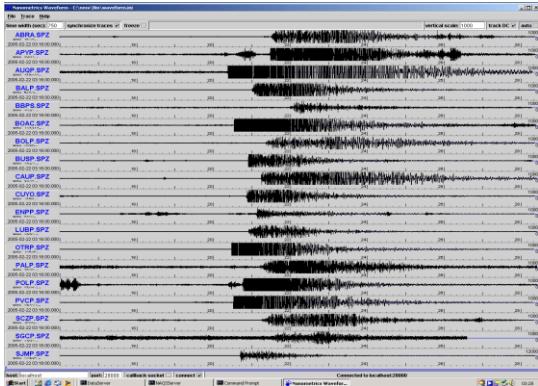
- **125** -station network (seismographs)
 - *30 staff-controlled, 95 satellite-telemetered + 8 volcano stations*



Data Receiving Center at Main Office



Unmanned stations with satellite communication



Sea Level Monitoring Network

Network	Existing
Real-time tide gauges	*19 (PHIVOLCS thru JICA) 5 (PTWC, RIMES, GLOSS) 5 (PHIVOLCS thru Satreps)
Community tsunami detection and warning system	10 (PHIVOLCS)



○ PHIVOLCS thru JICA

★ PHIVOLCS Community

December 2025 Tsunami Detection

Capacity Enhancement of Technical Staff

Secondment of short-term international staff from NTWCs of WG-SCS Member States to the SCSTAC



Regional Training on “Strengthening Standard Operating Procedures for Tsunami Warning and the use of the ICG/PTWS SCSTAC Tsunami Advisory Products” May 8-11, 2018; Yu Long Hotel, Haidian District, Beijing, China



Capacity Enhancement of Technical Staff



ITIC Training Programme—Hawaii (ITP-HAWAII) on Tsunami Early Warning Systems and the PTWC Enhanced Products, Tsunami Evacuation Planning and UNESCO IOC Tsunami Ready Recognition Programme, Honolulu, Hawaii, 07-18 August 2023

ITIC Training programme (ITP) on Tsunami Early Warning Systems ITP- TEWS Honolulu, Hawaii
15-26 September 2025

2.TSUNAMI HAZARD MAPPING

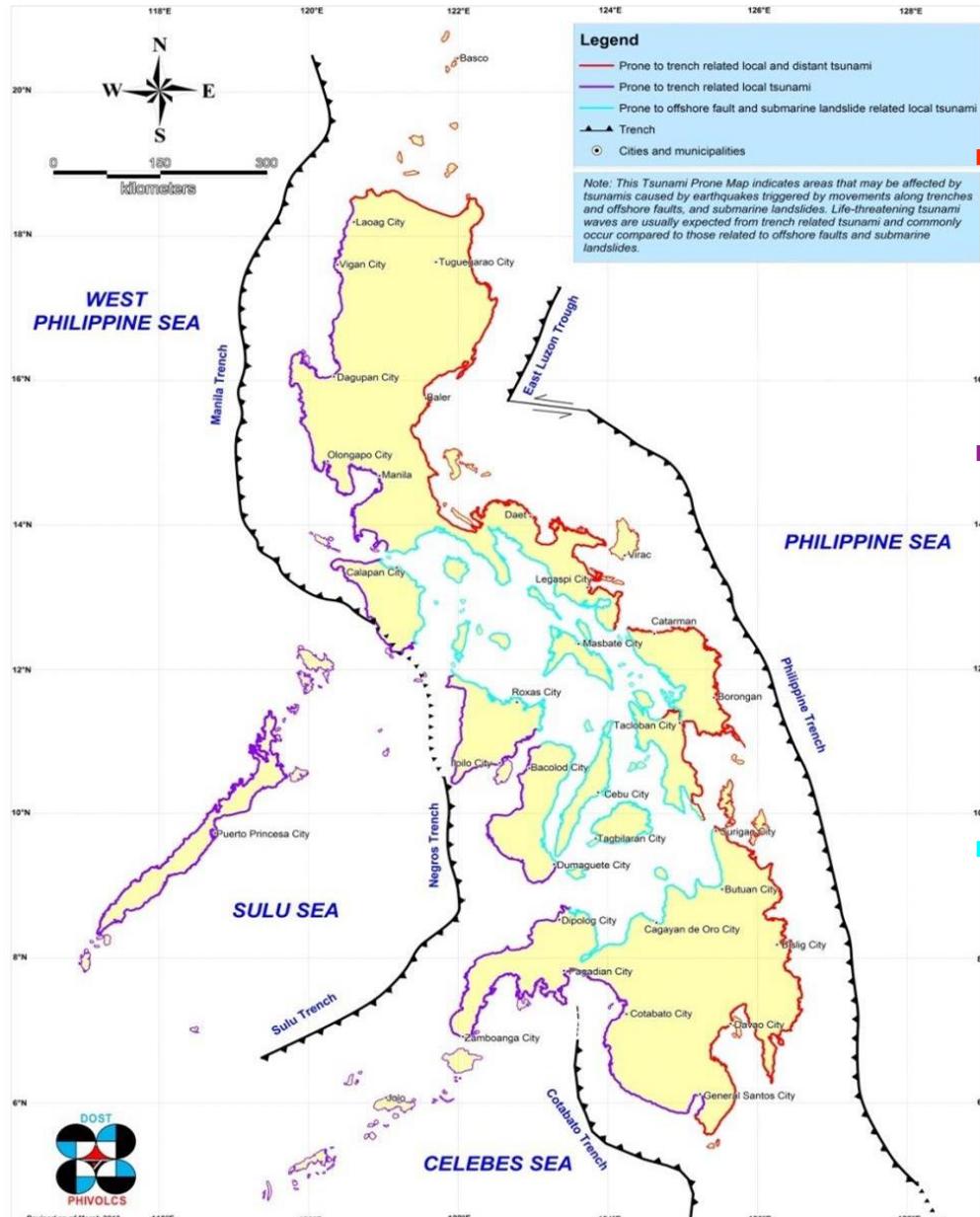


**Tsunami Risk
Mitigation Program
(2006-2007)**
Nationwide Tsunami
Hazard Maps
(1:50,000 scale)

**(READY PROJECT)
(2006-2009)**
Hazards mapping
and assessment for
Effective
Community-Based
Disaster Risk
Management

**CoAsT PH
(2023-present)**
Coast Assessment,
Mapping and
Research of
Tsunami Hazards in
the Philippines

Tsunami Prone Areas in the Philippines



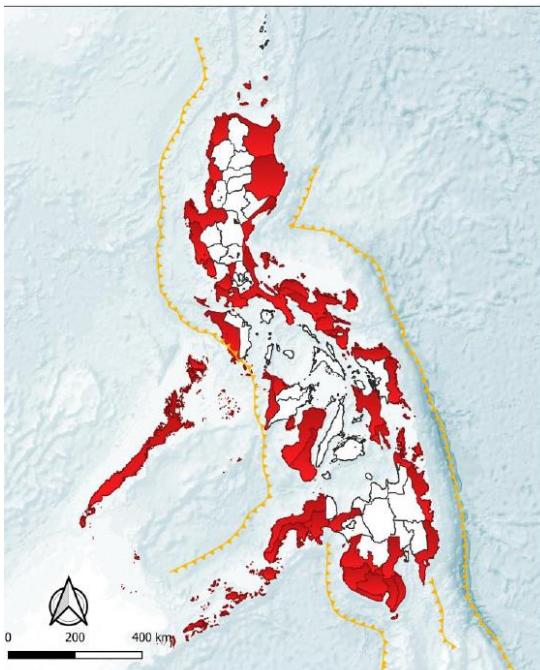
Prone to trench related local and distant tsunami

Prone to trench related local tsunami

Prone to offshore fault and submarine landslide related local tsunami

Tsunami Hazard Mapping through the years

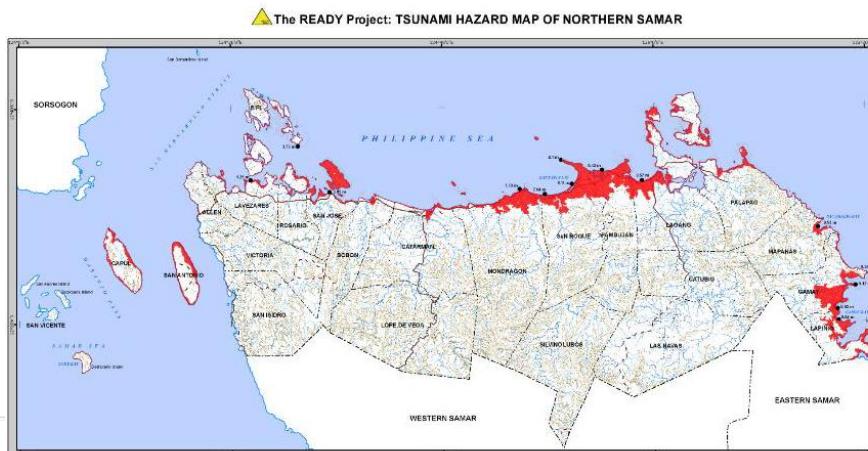
PHIVOLCS DOST-GIA 2006-2007



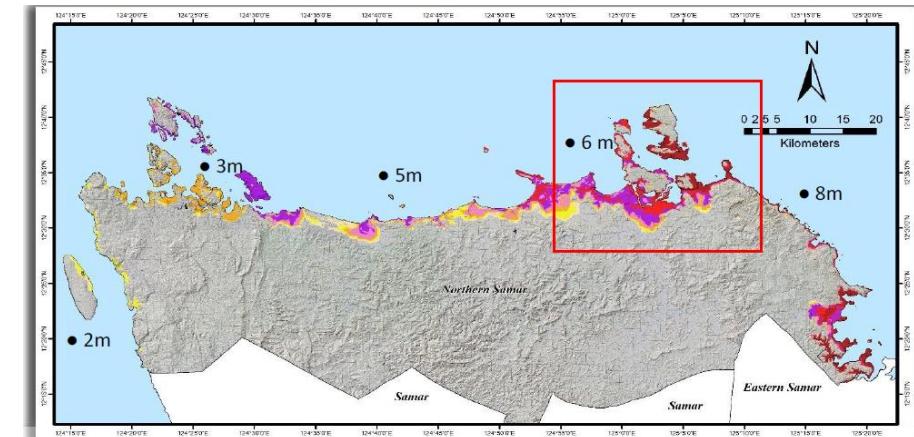
Nationwide First-Generation maps

Refinement of first-generation maps with availability of more detailed information

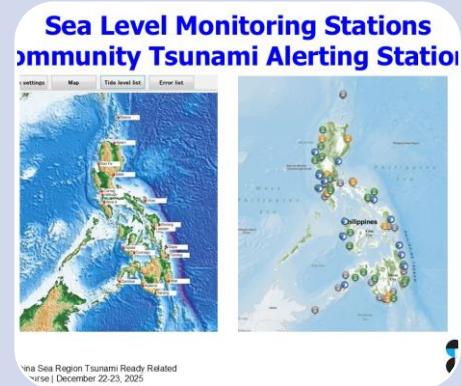
READY PROJECT, 2006-2013



PHIVOLCS Tsunami Hazard Mapping 2019-present



3. COMMUNITY-BASED TSUNAMI MONITORING AND WARNING



Establishment of a Cost- Effective Local Tsunami Early Warning System for Selected High-Risk Coastal Communities of the Philippines ; 2010-2012

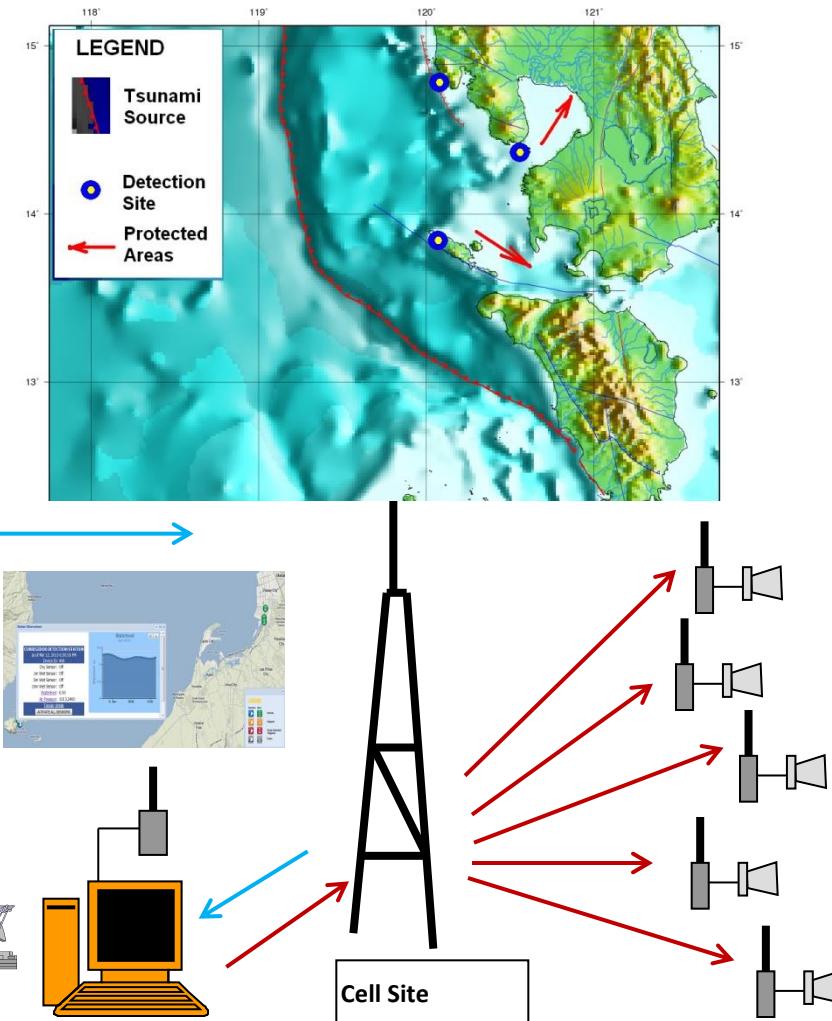
Enhancement of Earthquake and Volcano Monitoring and Effective Utilization of Disaster Mitigation Information in the Philippines
Tsunami Scenario Database 2010-2015

Improvement of Tsunami Monitoring 2013-2018
19 JMA-type sea level monitoring equipment installed
JICA

Tsunami Observation for community Warning Evacuation and Resilience (TOWER)

Community Tsunami early Warning System – PHIVOLCS

Tsunami Detection Stations



PHIVOLCS/ASTI and LGUs
Tsunami Visualization and Decision Tool

Communities



2006-2007 READY PROJECT GMMA READY, LGU-initiated

National-Initiated Community- Based Early Warning System (CBEWS)

2006

Gen Luna, Surigao del Norte
Diatagon, Linaga, Surigao del Sur

2007

Tandag, Surigao del Sur Bislig,
Surigao del Sur Canmanico,
Valencia Bohol San Pedro, Duero,
Bohol San Roque, Tolosa, Leyte
Bulak, Abuyog, Leyte

2008

Sogod, Southern Leyte
Pondol, Hinunangan, S. Leyte
Himatagon, Malibago, Sug-angon,
St Bernard, S. Leyte
Sta Mercedes, Maragondon, Cavite
Bucana, Ternate, Cavite
Mapalad, Dinalunga, Aurora
Palanan, Isabela

2009

Barobaybay, Lavezarez,
Northern Samar
Cabatuan, Palapag, N. Samar
Japitan, Dolores, Eastern Samar
Suribao, Borongan, E. Samar San
Miguel, Llorente, E. Samar

Post-READY Project

2011

Patar, Bolinao, Pangasinan

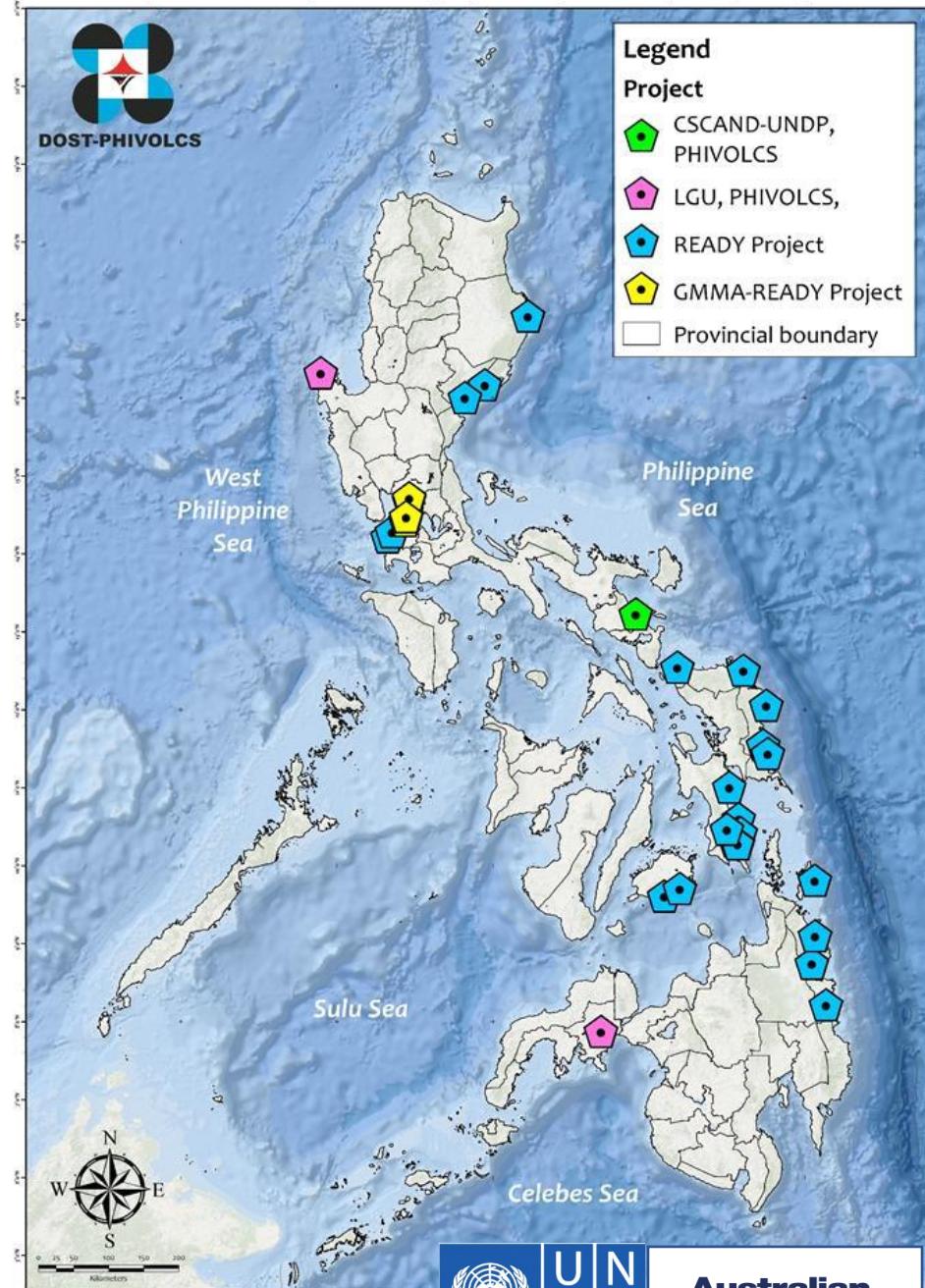
2014

Tanza, Navotas City
Hulo, Obando, Bulacan

2015

Lao-Lao, Cavite City
San Rafael, Novoleta

Community-Based Early Warning System (CBEWS) Projects (2006-2015)

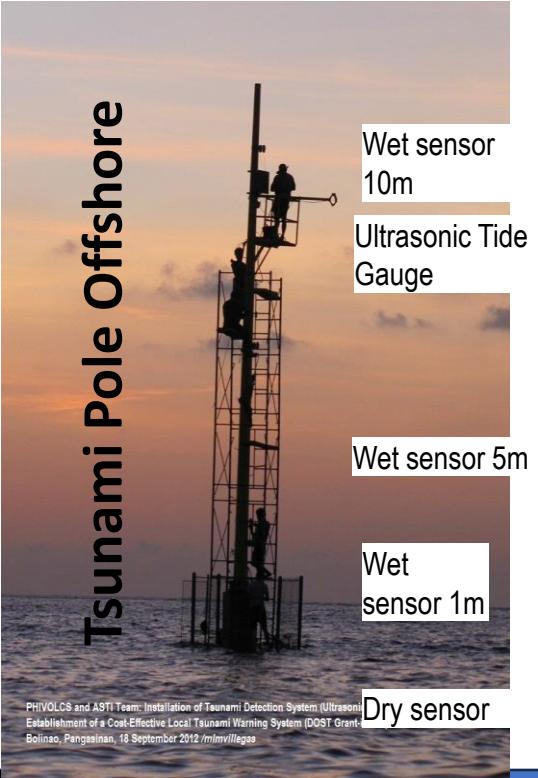


Australian
Aid

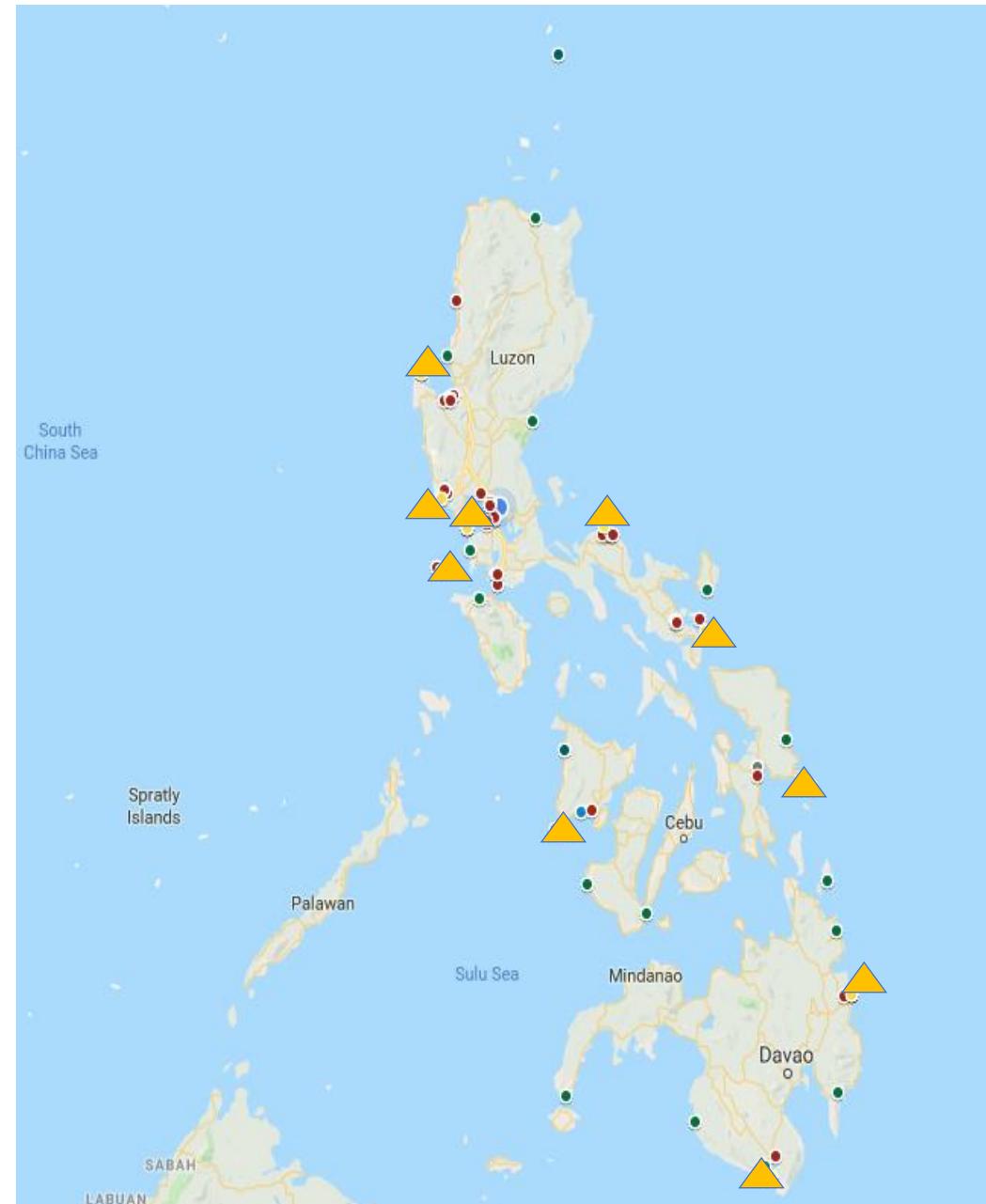


2010-2012: Establishment of a Cost-Effective Local Tsunami Early Warning System for Selected High-Risk Coastal Communities of the Philippines

▲ 10 detection sites



● 47 warning sirens



4. TSUNAMI INFORMATION MATERIALS DEVELOPMENT



Tsunami Risk
Mitigation Program
(2006-2007)
Development of
Tsunami Information
materials

Enhancement of
Earthquake and
Volcano Monitoring
and Effective
Utilization of Disaster
Mitigation
Information in the
Philippines
Tsunami Comics on the
2011 event

DANAS Project: Earthquake,
tsunami and Volcano Disaster
Narratives for an Experiential
Knowledge-based Science
Communication
Earthquake and Tsunami
descriptions in the local
languages: Tagalog,
Kapampangan, Ilocano,
Cebuano (Visayas), Cebuno
(Mindanao) and Hiligaynon

2006-2007 DOST GIA Risk communication at the local level

TSUNAMI

A **TSUNAMI** is a series of giant sea waves commonly generated by under-the-sea earthquakes and whose heights could be greater than 5 meters. It is erroneously called tidal waves and sometimes mistakenly associated with storm surges. Tsunamis can occur when the earthquake is shallow-seated and strong enough to displace parts of the seabed and disturb the mass of water over it.



Destroyed houses in Mindanao, South Cotabato due to tsunami surges in Delos Rios brought by the 1976 Mindanao Earthquake.



A group destroyed by tsunami during the 1964 Andoas Earthquake.

The coastal areas in the Philippines especially those facing the South China Sea, Sulu Sea and Celebes Sea can be affected by tsunamis that may be generated by local earthquakes.

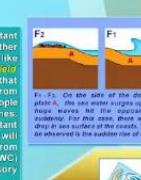
On 17 August 1976 a M7.6 earthquake in Mindanao produced tsunamis which devastated the southwest coast of Mindanao and left more than 3,000 people dead, with at least 1,000 people missing. More than 3,000 people were injured and approximately 12,000 families were rendered homeless by more than 5-meter high waves.

The 15 November 1994 Mindoro Earthquake also generated tsunamis that left 782 casualties.

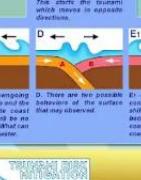
These tsunamis occurred within a very short time, with a first wave reaching the shoreline nearest the epicenter, 2 to 5 minutes after the main shock. These tsunamis were both locally-generated. There will not be enough time for warning in case of locally generated tsunamis.



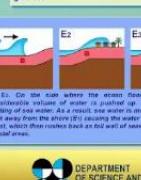
Autumn 2001 issue



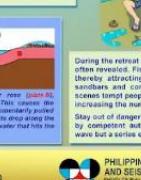
Autumn 2001 issue



Autumn 2001 issue



Autumn 2001 issue



Autumn 2001 issue



Autumn 2001 issue



Autumn 2001 issue



Autumn 2001 issue



Autumn 2001 issue



Autumn 2001 issue



Autumn 2001 issue



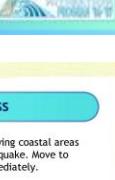
Autumn 2001 issue



Autumn 2001 issue



Autumn 2001 issue



Autumn 2001 issue



Philippine Institute of Volcanology and Seismology (PHIVOLCS)
Department of Science and Technology (DOST)

DEVELOPING TSUNAMI PREPARED COMMUNITY

Together we can save lives

In the past, people have assumed that directly planning and preparing for the local responsibility of the government. But as proven in the recent disasters that have occurred in recent years, positive community preparedness can save more lives especially if it is done in time to take a role to play in its disaster risk mitigation efforts.

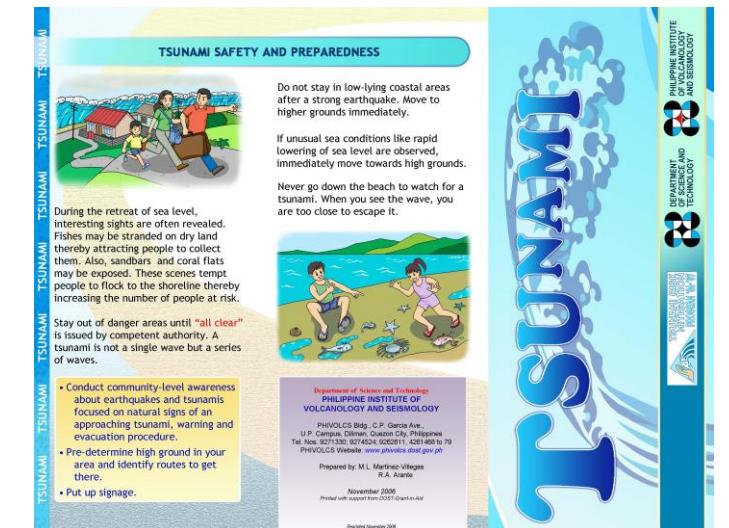
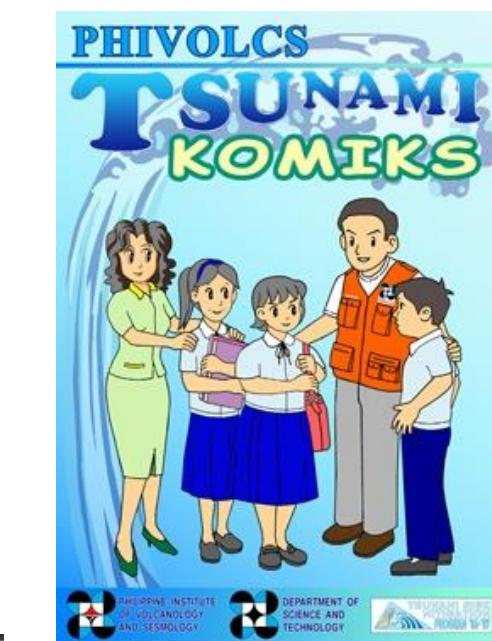
The role of national government agencies is to help the local government units and the communities to develop a local disaster risk reduction program that would capacitate the communities for disaster preparedness. These include advocacy to policy makers, technical assistance, and disaster risk reduction plans in the national development plan and generating and providing the right information to the communities to develop their own disaster mitigation plans in the national development plan and generating and providing the right information to the communities to develop their own disaster risk reduction plans.

Specific interest is put on the importance of community preparedness at the community level, as there is not sufficient time for warning from the national level in case of need for more or locally-generated tsunami. The time for warning is often delayed after major disasters such as the 1976 August Mindanao Earthquake and the 2004 December Indian Ocean Earthquake. After these events, it took only 2 to 5 minutes at the earliest up to 20 minutes after the earthquakes for the tsunami waves to hit the coastal areas in the Philippines. Residents of the coastal communities must be prepared to respond to the disaster when it occurs, to evacuate to higher ground once signs of incoming tsunami are observed.

But how does a community go about preparedness and planning for tsunami? There are various steps local government units to tsunami-prepared communities. Openly discussing facts about tsunami disasters will greatly increase awareness and interest instead of propagating specific information that may not be true. The issue on tsunami hazard is avoided. Any tsunami preparedness plan need not be expensive. There is no such thing as poor communities. They could not be prepared to prepare for tsunami as many risk-reduction activities are simple and low-cost. They are not as developed infrequent but high-impact type events, and it is important to note that most tsunami disasters can develop at any point that a community can imagine in an instant.

What is a tsunami? A tsunami is a series of sea waves commonly generated by under-the-sea earthquakes and whose heights could be greater than 5 meters. For so long, it has been erroneously called tidal waves and still often mistakenly associated with storm surges (tall waves associated with tropical cyclones). The tsunami is shallow-seated and strong enough to vertically displace parts of the seabed and displace water.

The coastal areas in the Philippines can be affected by tsunamis that may be generated by local earthquakes. Locally-generated tsunamis can occur within very short time, with the most common being the 1976 August Mindanao Earthquake, before any official warnings can be transmitted from the national level to the community level.



2010-2015 Learning from the experiences of others



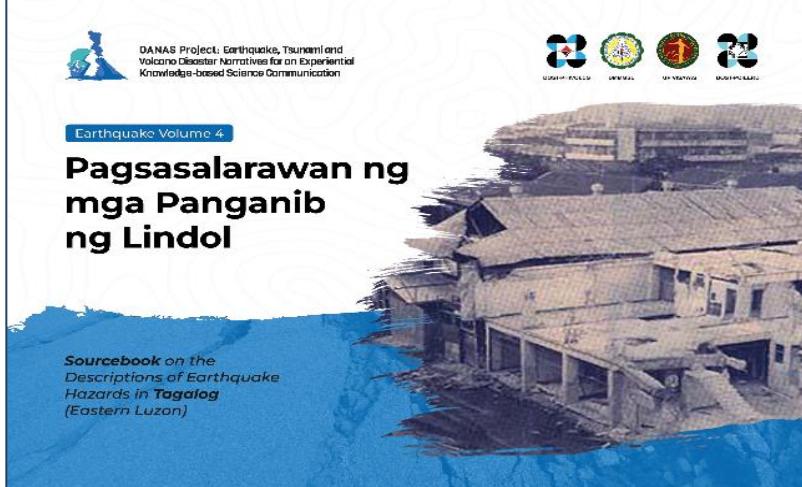
Fig. 6. A JICA-Philippines representative with the Director of PHIVOLCS unveiling the first two comics at the launching event, March 2013.



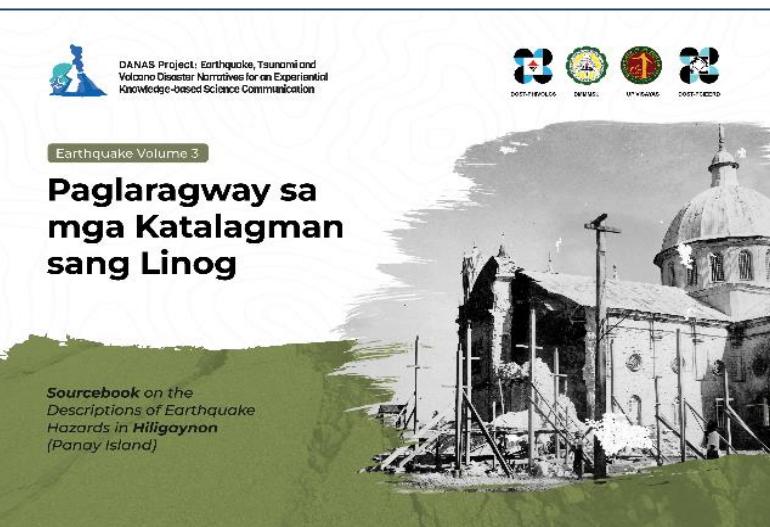
Ilocano for Northern Luzon Earthquakes



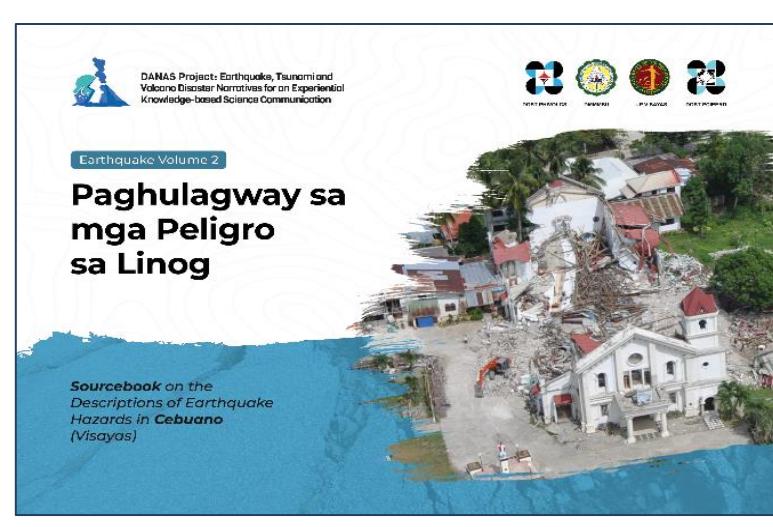
Tagalog for Aurora, Nueva Ecija Earthquakes



Kapampangan



Hiligaynon Panay Earthquakes



Cebuano for Negros and Bohol Earthquakes



Cebuano for Mindanao Earthquakes



5. COMMUNITY CAPACITY BUILDING



3R LGU (multi-hazard IEC campaign and includes topics about tsunami)

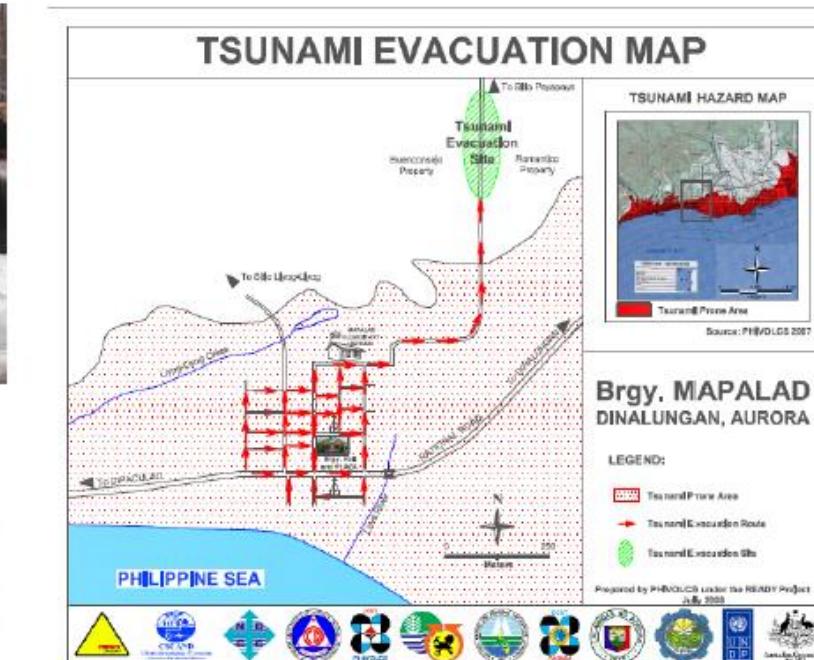
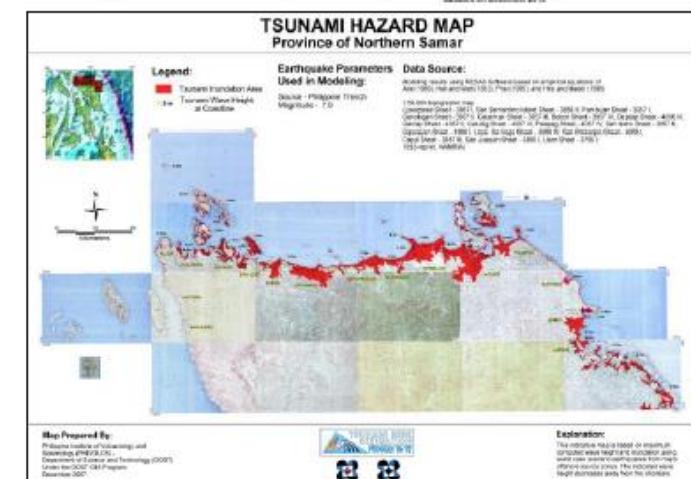
Developed roll out plan for provinces and monitoring tool

3R Tsunami Ready Community

Develop Communities that are ready to evacuate in the event of tsunami occurrence

PHIVOLCS

COMMUNITY

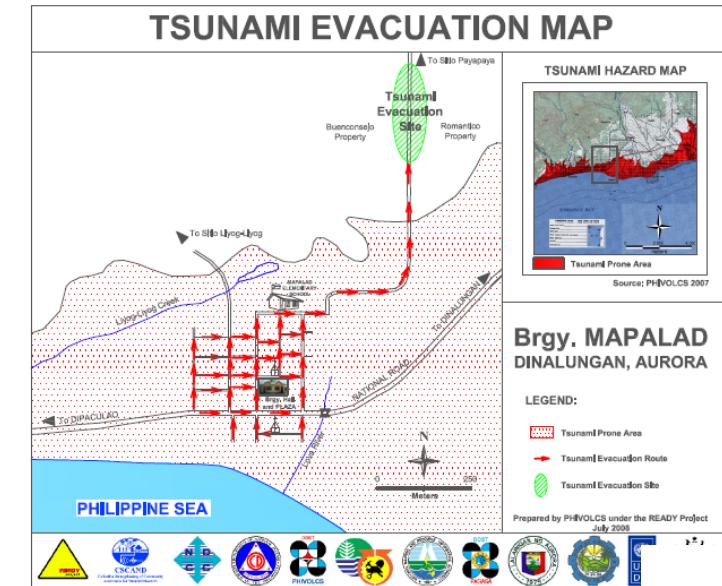


2006-2007 READY PROJECT

Community-based early warning system for tsunami and conduct tsunami preparedness drills in communities

- Evacuation plans and maps
- Signage installation
- IEC seminars
- Community Drills

Installed by partnership LGUs and implementing NGAs



6. PROMOTION OF AWARENESS AND PREPAREDNESS



Media
Seminar

PressCons

Exhibit
Tsunami
tank

World
Tsunami
Awareness
Day



National Consultation Workshop for Harmonized Tsunami Program 2019

- Venue for a coordinated multi-agency, multi-stakeholder discussion
- Identify current, ongoing initiatives of various organizations on Tsunami DRR
- Identify timetable of implementation of existing Tsunami DRR activities from various organizations for more coordinated activities



National Harmonized Tsunami DRR 2020 (virtual, focus on Clusters 1,2,3 (Mindanao)

- Platform/venue for a coordinated multi-agency, multi-stakeholder discussion
- Toolkit/manual/unified template for reporting past accomplishments, current initiatives and short-term plans/programs on Tsunami DRR
- Create and maintain platform for reporting Tsunami DRRM-related initiatives that is accessible to all partners



National Harmonized Tsunami DRR 2021 (virtual, Clusters 1-9)

- Platform/venue for a coordinated multi-agency, multi-stakeholder discussion
- Toolkit/manual/unified template for reporting past accomplishments, current initiatives and short-term plans/programs on Tsunami DRR
- Create and maintain platform for reporting Tsunami DRRM-related initiatives that is accessible to all



GeoRiskPH™

Nationwide Tsunami Coping Capacity Initiatives

GeoRiskPH
INNOVATIONS FOR RESILIENCE

☰

- Dashboard
- OTHER GEORISKPH PLATFORMS
- GeoAnalyticsPH
- HazardHunterPH
- PlanSmartPH



Data Collection Tool - For Trainings Only
Training GeoMapperPH
[View Application](#)



Data Collection Tool - For Trainings Only
Training GeoMapperPH
[View Application](#)

Philippine Standard Time: Friday, April 25, 2025 at 4:21:28 PM

Mara Joy Pancho



Nationwide Tsunami Coping Capacity Initiatives

GeoRiskPH Feedback Form | HazardHunterPH | GeoAnalyticsPH

Smart Editor

1. Use the **Query** or **Search bar** to zoom in to your LGU
2. Turn on the **City/Municipal** or **Provincial** boundary (Tsunami DRR Survey) in the **Layer List**
3. Click the LGU boundary on the map and select "Smart Editor" in the ellipsis options

Layers

- PSA - Barangay boundary (Tsunami DRR Survey)
- PSA - City/Municipal boundary (Tsunami DRR Survey)
- PSA - Provincial boundary (Tsunami DRR Survey)
- Tsunami Signages (point location)
- Community-based EWS (point location)
- Schools that Conducted Tsunami Drills
- Coastal and Tsunami-Prone LGUs (viewing only)
- LGUs that conducted TEWS (viewing only)
- LGUs with Mangrove Planting (viewing only)

Find address or place

Search

- Search City/Municipality
- Search Province

Results

Layers

- Barangay boundary (Tsunami DRR Survey)
- City/Municipal boundary (Tsunami DRR Survey)
- Provincial boundary (Tsunami DRR Survey)

Smart Editor

- LGU used Tsunami Hazard Map from PHIVOLCS
- LGU used Tsunami Hazard Map from other sources
- Please provide tsunami hazard map details (year used, etc.)
- Please identify specific LGUs with tsunami evacuation map
- LGU conducted Tsunami risk assessment
- LGU identified training needs for DRRMO

POWERED BY esri

Earthstar Geographics | Google | Acknowledge Department

127.732 6.509 Degrees

Kota Kinabalu Kundasang Sandakan Lahad Datu Tawau LARUAN FEDERAL TERRITORY SABAH

2019-2021 Tsunami Summit



National Tsunami Ready Board (NTRB) creation

2022

2023

2024

2025

- Dec. 6/15 – PHIVOLCS request to OCD to create NTRB
- Dec 19 – OCD acknowledged and assigned PDPS

- March 6 -Oct-Dec – Series of meetings, presentations and discussions, Writeshop, Drafting of MC

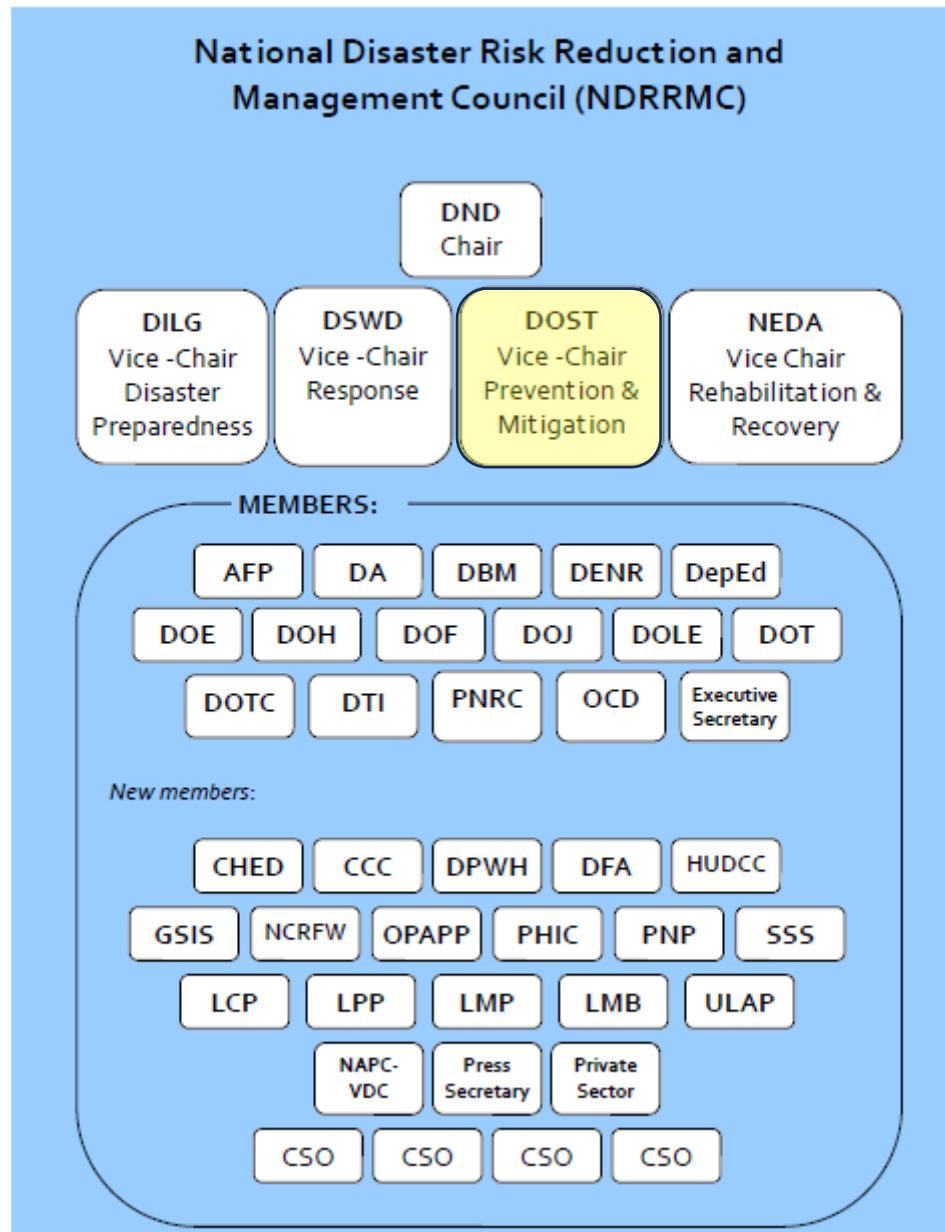
- Jan 17 – submitted draft MC to P&M Pillar
- Jan – Feb – series of discussions re MC

Ways Forward
Series of meetings
October 2025

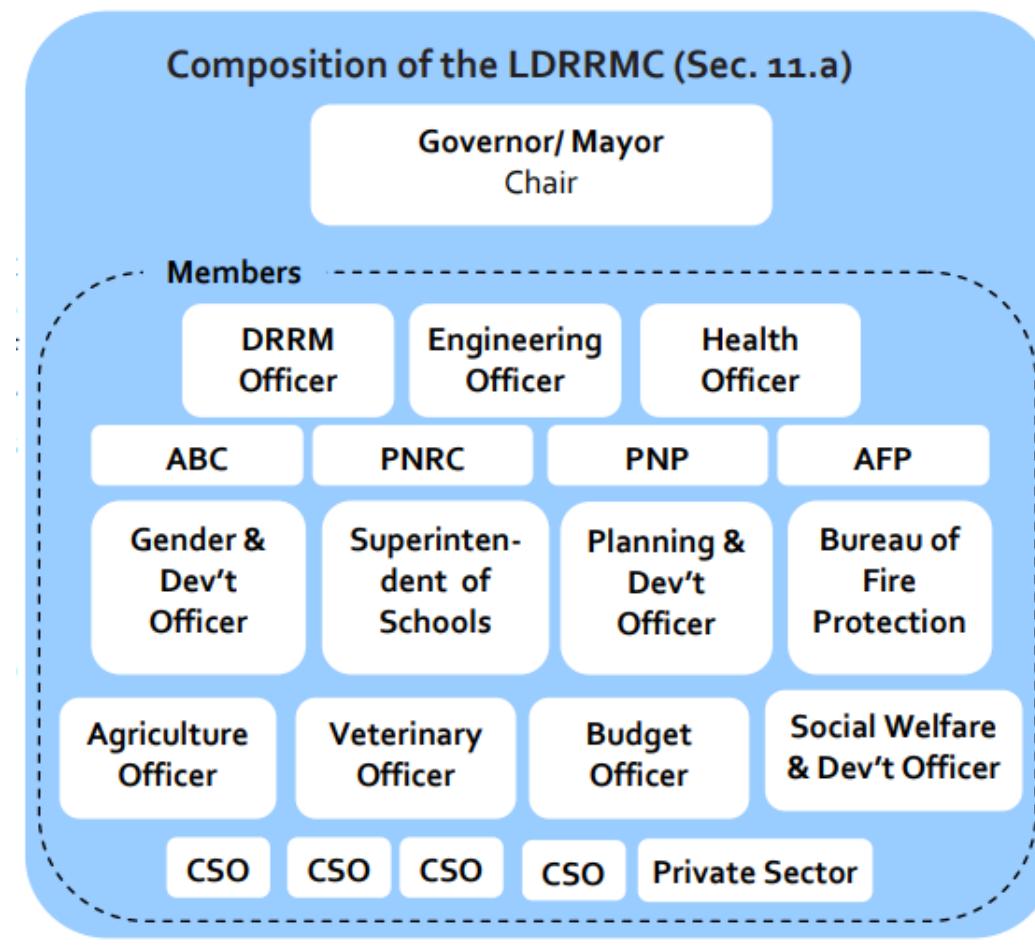
Composition
Office of Civil Defense
PHIVOLCS
DILG
+other agencies



National Structure for DRRM



R.A. 10121 of 2010- DRR Law



Tsunami Ready Philippines National Workshop

8-9 December 2025



2026-2030

- Establishment of the National Tsunami Ready Board (with NDRMO as Head, multi agency membership)
- Implementation of the Tsunami Ready Philippines Program