

Tsunami Ready Philippines National Workshop
Park Inn by Radisson, North Edsa, Quezon City
December 11, 2025

Community Tsunami Alerting Stations (CTAS) and Decision Support Tools



Tsunami Early Warning System of the Philippines (TeWS-Philippines)

**National Tsunami Monitoring and Early Warning System (NTMEW)
Management, Operation and Implementation of Systems for Tsunami Warning (MOIST)
Tsunami Observation for Community Warning and Resilience (TOWER)**

Angelito G. Lanuza
DOST-PHIVOLCS

ESTABLISHING TSUNAMI MONITORING NETWORK in the PHILIPPINES

2011-13

DOST Project

Establishment of a Cost-Effective Local Tsunami Early Warning System for Selected High-Risk Coastal Communities of the Philippines (10 Sea Level Monitoring Stations and 35 Alerting Stations)



PHILIPPINE TSUNAMI INFORMATION

Tsunami Information	Threat to the Philippines	Recommended Action for Affected Places
Advisory NO TSUNAMI THREAT	A large earthquake is generated but either (1) there is no tsunami generated by this event or (2) a tsunami was generated but will not reach the Philippines.	No evacuation needed. The advisory is issued for information purposes only.
Advisory SEA LEVEL CHANGE MONITORING	PHIVOLCS will monitor sea level changes and provide updates.	No evacuation order is in effect. Public is advised to wait and listen for updates.
Advisory MINOR SEA LEVEL DISTURBANCE	Minor sea level disturbance is expected in some coastal areas with wave heights of less than one (1) meter above the expected ocean tides.	People are advised to stay away from the beach and not to go to the coast. People whose houses are located very near the shoreline are advised to move farther inland. Owners of boats in harbors, estuaries or shallow coastal waters of the affected provinces should secure their boats and move away from the waterfront. Boats already at sea are advised to stay offshore in deep waters until further notified.
TSUNAMI WARNING	Destructive tsunami is generated with life threatening wave heights. (A destructive tsunami is expected to arrive to Philippine coastlines with wave heights of greater than one (1) meter above the expected ocean tides.)	Immediate evacuations of coastal communities that maybe affected are strongly advised. Owners of boats in harbors, estuaries or shallow coastal waters of the affected provinces should secure their boats and move away from the waterfront. Boats already at sea are advised to stay offshore in deep waters until further notified.

Threat

Do not Leave Phils

Watchful

Safe

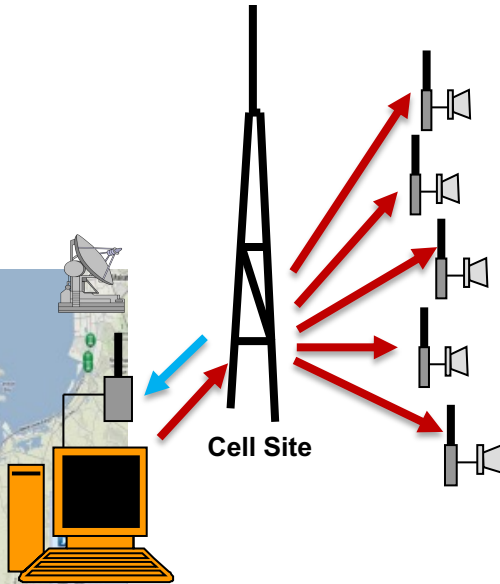
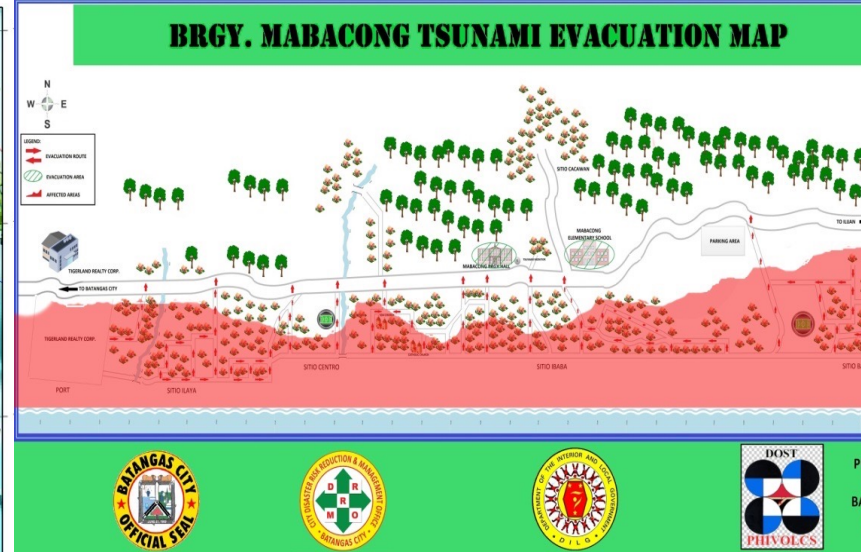
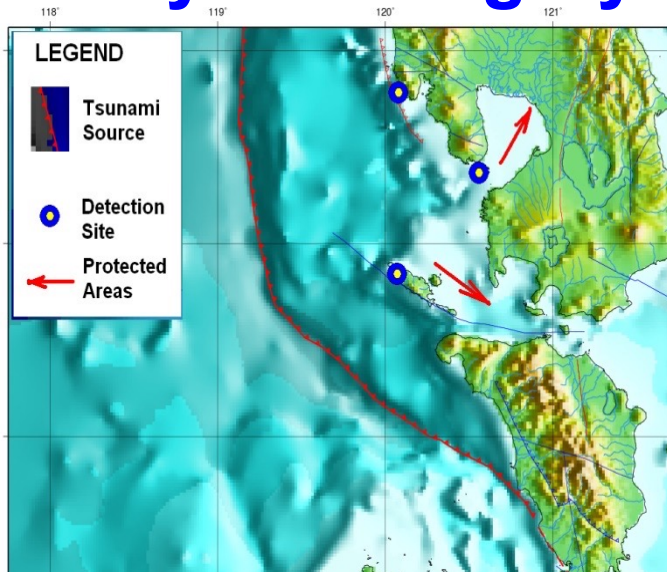
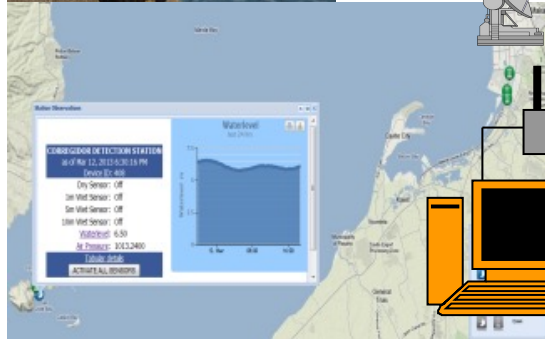


The Philippine Institute of Volcanology and Seismology (PHIVOLCS) is the Tsunami Warning Focal Point of the Philippines.
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 Website: www.phivolcs.dost.gov.ph

June 2013

Tsunami Early Warning System of the Philippines

Tsunami Detection



PHIVOLCS/ASTI and LGU Visualization and Decision Support Tools

CTAS and Evacuation Plans



Tsunami Early Warning System

A collaborative project among DOST, DOST-ASTI DOST-PHIVOLCS and all participating LGUs

61. DEL MATI CITY CTAS

Community Tsunami Alerting Station

or SMS triggering

Station ID: **2911**

Address: **Brgy. Don Enrique Lopez, City of Mati, Davao Oriental**

Date Established: **October 12, 2022**

Last reading: **2025-12-06 00:00:07**

Alarm status: **OFF**

ACTIVATE

DEACTIVATE



29 SLMS for Tsunami Detection 102 Community Tsunami Alerting Station (CTAS)

(102) Salapingao Dagupan City CTAS	by LGU October 2025
(101) Lomboy Dagupan City CTAS	by LGU October 2025
(100) Boquig Dagupan City CTAS	by LGU October 2025
(99) Tondalingan Dagupan City CTAS	by LGU October 2025
(98) San Roque Virac CTAS	by PHIVOLCS October 2025
(97) Poblacion A Borongan City CTAS	by PHIVOLCS October 2025
(96) Bongtud Tandag City CTAS	by PHIVOLCS October 2025
(95) Lubukan Hadji Muhtamad CTAS	by MOST-BARMM Sept 2025
(94) Jovellar Tarragona CTAS	by PSTO DavOr/LGU/Kalahi Aug 2025
(93) Poblacion Malita CTAS	by PSTO DavOcc July 2025
(92) Poblacion Manay CTAS	by PSTO DavOr June 2025
(91) San Roque Sirawai CTAS	by PSTO ZamNorte March 2025
(90) Papaya Nasugbu CTAS	by PHIVOLCS 2024 Dec 2024
(89) Batu-Batu Panglima Sugala CTAS	by MOST-BARMM November 2024
(86) Malinao Mabuhay CTAS	by PSTO ZamSibugay 2024
(84) San Pedro Pagadian City CTAS	by PHIVOLCS 2024
(83) Poblacion Caraga CTAS	by PSTO DavOr 2024
(82) Tamontaka Cotabato City CTAS	by MOST-BARMM March 2024
(73) Pura Datu Blah Sinsuat CTAS	by MOST-BARMM March 2024
(72) Magsaysay Parang CTAS	by MOST-BARMM March 2024
(68) Poblacion Boston CTAS	by PSTO DavOr October 2023
(61) DEL Mati CTAS	by PHIVOLCS October 2022
(56) Central Tarragona CTAS	by PSTO DavOr Dec 2021

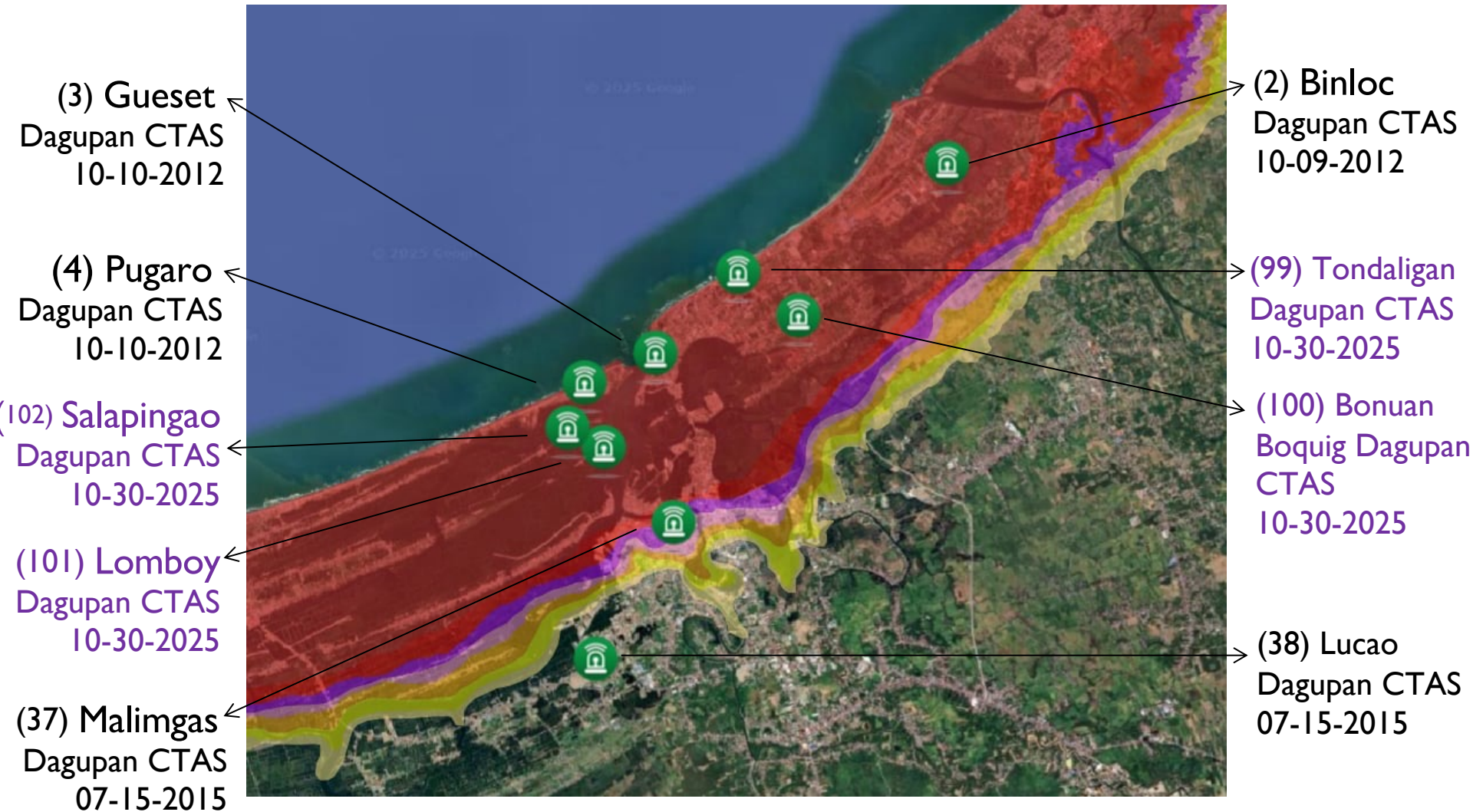
Normal

Surge

Delay

Down

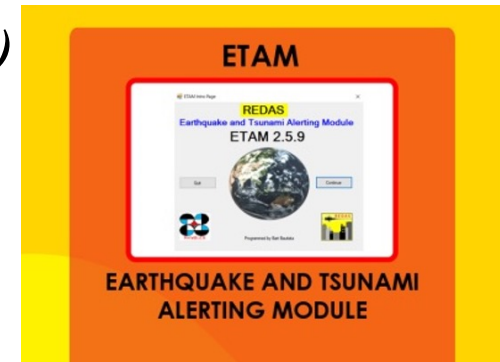
CTAS of Dagupan City



Inauguration of the latest 4 CTAS shall be on December 13, 2025 followed by presentation of Tsunami Evacuation Maps of 15 inundated Barangays of Dagupan City (with vertical evacuation)

Integrating CTAS into TeWS Philippines

- Check the Siren Installation and Compatibility
- Conduct of Information, Education & Communication Campaign
- Tsunami Evacuation Planning/Workshop
(*Tsunami Generation, Tsunami Inundation, Operation Listo*)
- Integration into TeWS Website
- Installation of additional Decision Support Tools:
REDAS-ETAM and Tsusim on Evacuation/Impact Calculation
- Training the LGU on CTAS Activation
- Install pilot Directional Signage (CBEWS)



Developing a Tsunami Prepared Boston and Davao Oriental

27 October 2023

- Tsunami Early Warning System of the Philippines and Community Tsunami Evacuation Planning
- Community-Based Early Warning System (CBEWS) for Tsunami
- *12 indicators of Tsunami Ready Recognition.* An international community-based recognition programme developed by Intergovernmental Oceanographic Commission (IOC) of UNESCO. It aims to build resilient communities through awareness and preparedness strategies that will protect life, livelihoods and property from tsunami in different regions



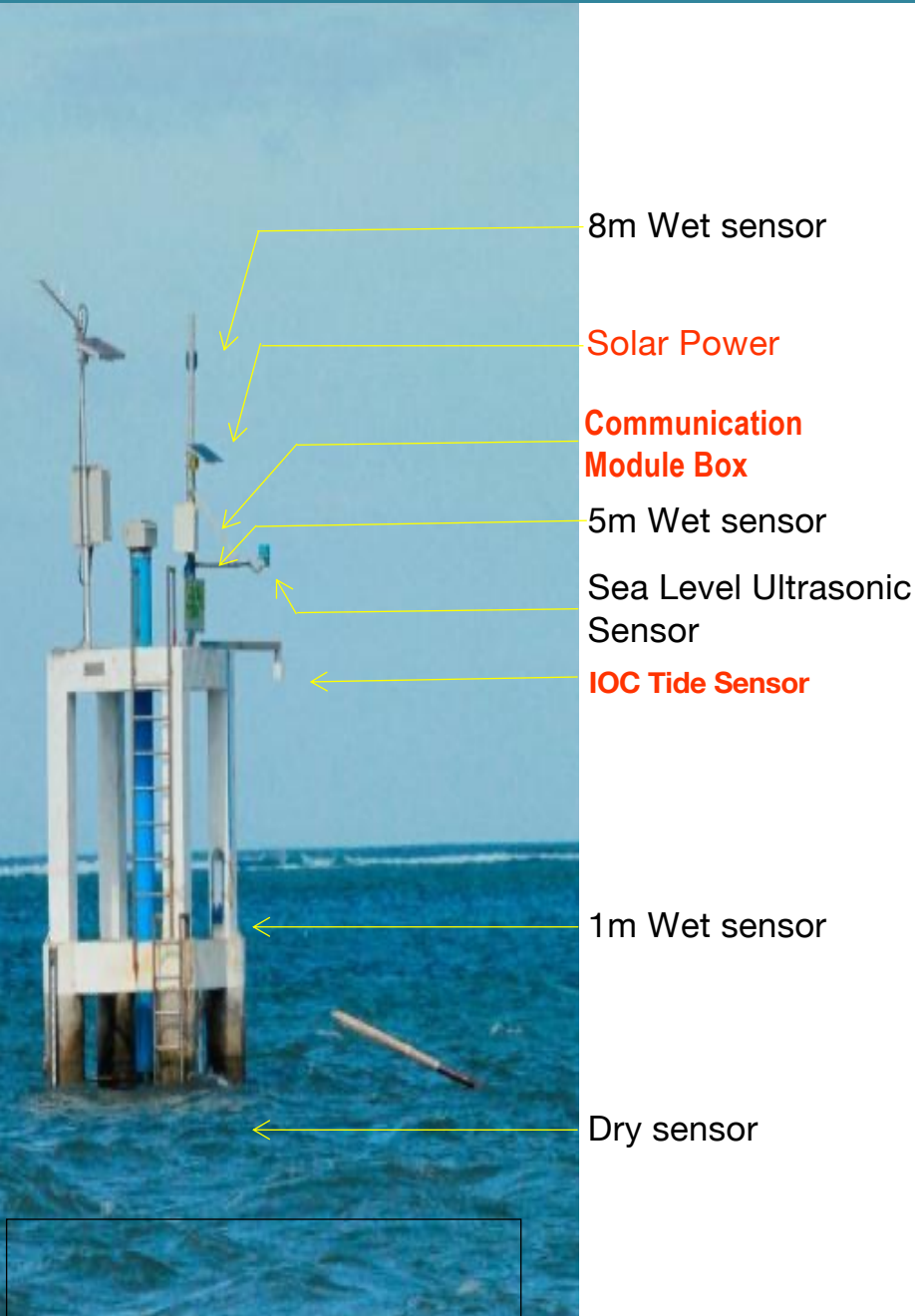
***First to introduce to LGU during the
Mainstreaming the REDAS-Tsusim
and CBEWS into Local
Development Plans
April 2023***



Angelito Galvez Lanuza
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Department of Science and Technology
Philippine Institute of Volcanology and Seismology



TSUNAMI DETECTION AND NATURAL SIGNS



SHAKE

At least **Magnitude 6.5** - near real-time REDAS-ETAM

Offshore Epicenter - near real-time REDAS-ETAM

Intensity V to VI – PHIVOLCS Earthquake Intensity Scale

DROP

Empty water **Dry Sensor**

Sudden change on Sea Level by **Ultrasonic SL Sensor** (every 10 minutes data into every minute)

ROAR

Incoming Tsunami Waves confirmed by **Wet Sensors**

Sudden change on Sea Level for every minute by **Ultrasonic SL Sensor**

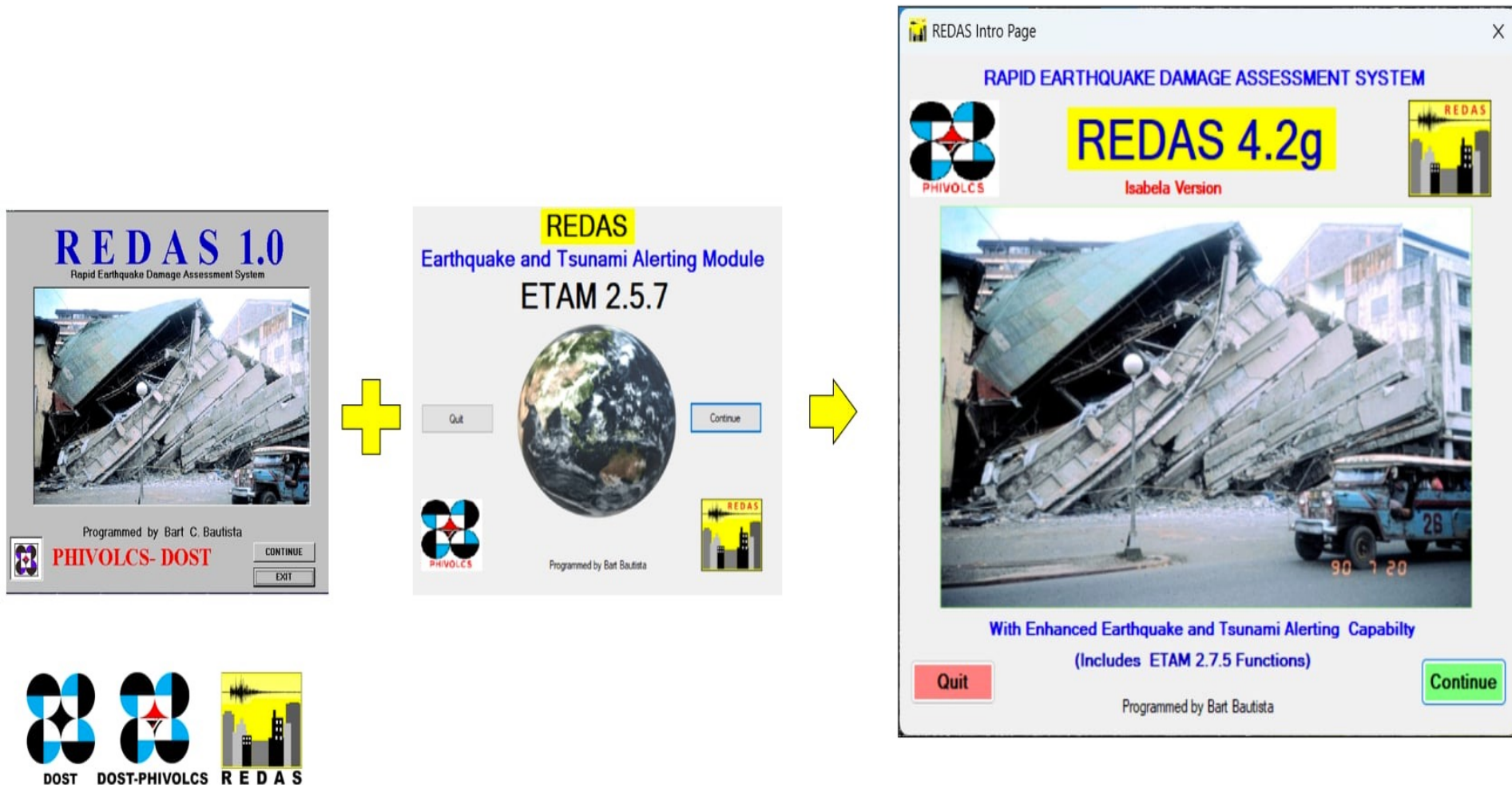
21. BALER AURORA SLMS for Tsunami Detection

Station ID: 3199
Address: **Zabali, Baler, Aurora**
Date Established: **August 5, 2025**
Last reading: **2025-12-09 16:20:12**
Air pressure: **ERR**
Water level: **1.32**
Dry sensor: **OFF**
Wet sensor 1: **OFF**
Wet sensor 2: **OFF**
Wet sensor 3: **OFF**



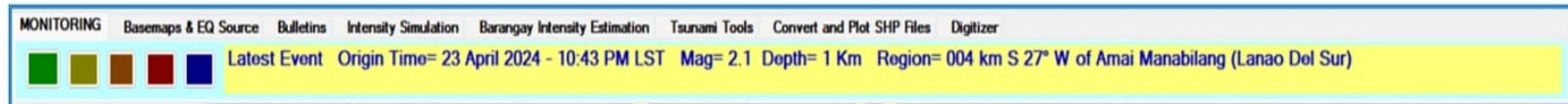
REDAS Earthquake and Tsunami Alerting Module

Formerly a separate module, now a merged feature with PHIVOLCS-developed Rapid Earthquake Damage Assessment System (REDAS) for monitoring, warning, and impact assessment.

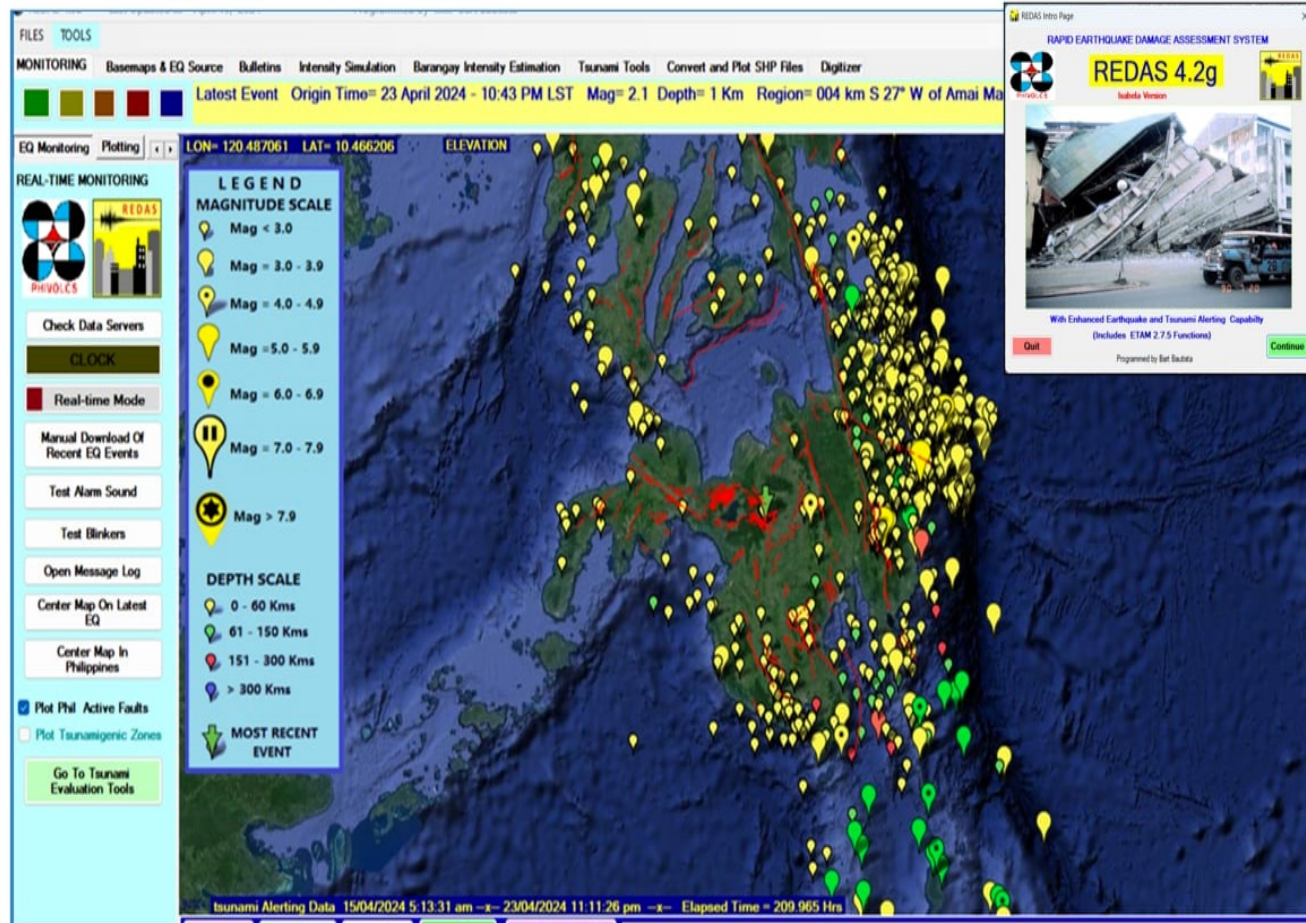


Real Time Seismicity from PHIVOLCS, RIMES and USGS NEIC

For Monitoring (24/7), activate by clicking **Real-time Mode**. The map will center on the **most recent earthquake event**. The latest event is indicated by a **green arrow**.



- Fetch data at regular intervals.
- **PIVS_M**: Earthquake events of the current month
- **Monitoring** Tab will also display the info of the latest earthquake



CTAS Installation, Integration to TeWS Philippines, IEC campaign and Tsunami Evacuation Planning

Unveiling of the 86th CTAS as
'Malinao Mabuhay CTAS' by
the PSTO through DOST-CEST
Project (October 2024)

*Engaging the communities in the
planning process on tsunami
evacuation*



CTAS Installation, Integration to TeWS Philippines, IEC campaign and Tsunami Evacuation Planning

Inclusivity, gender responsive and focusing on vulnerable sectors

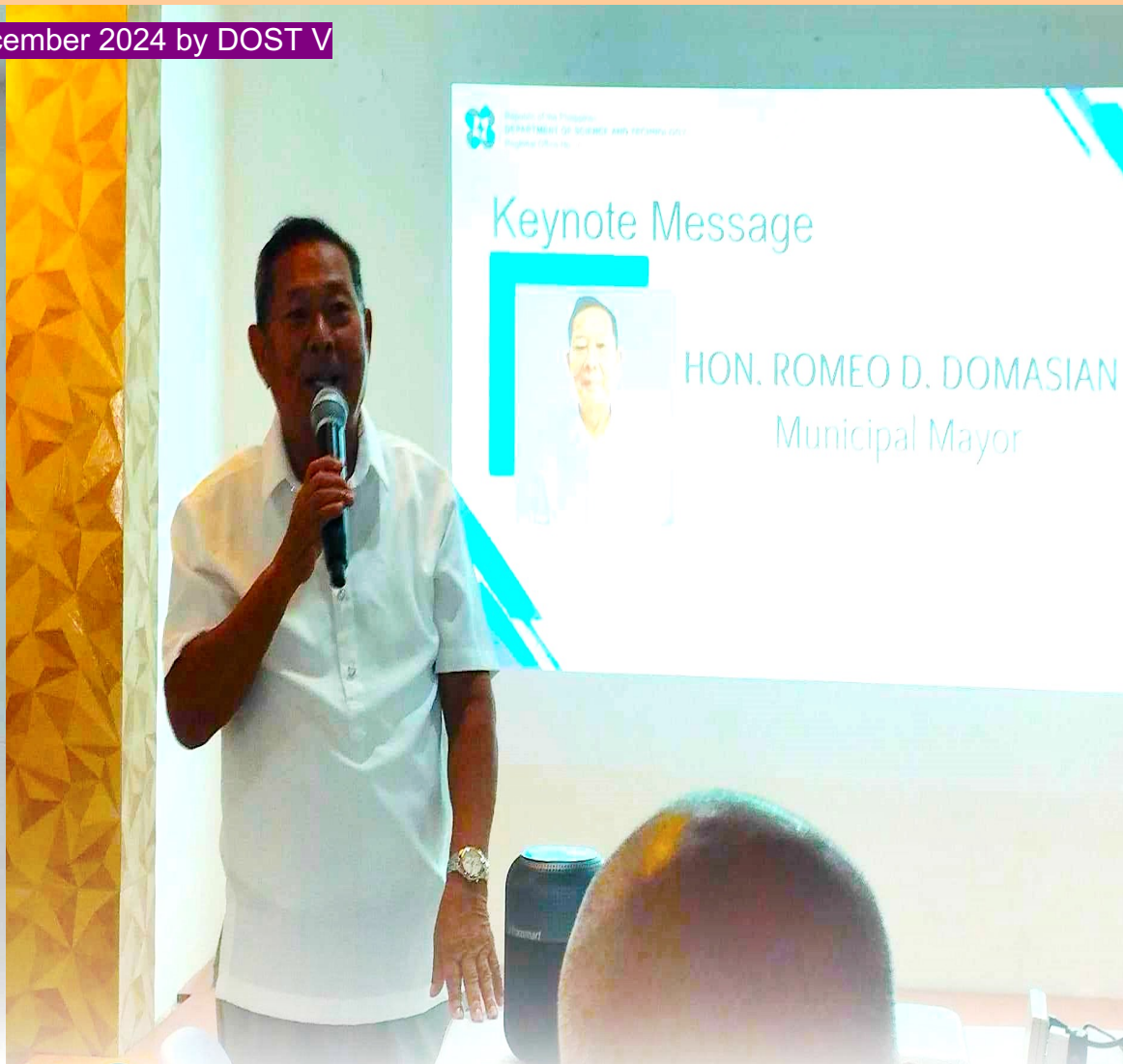
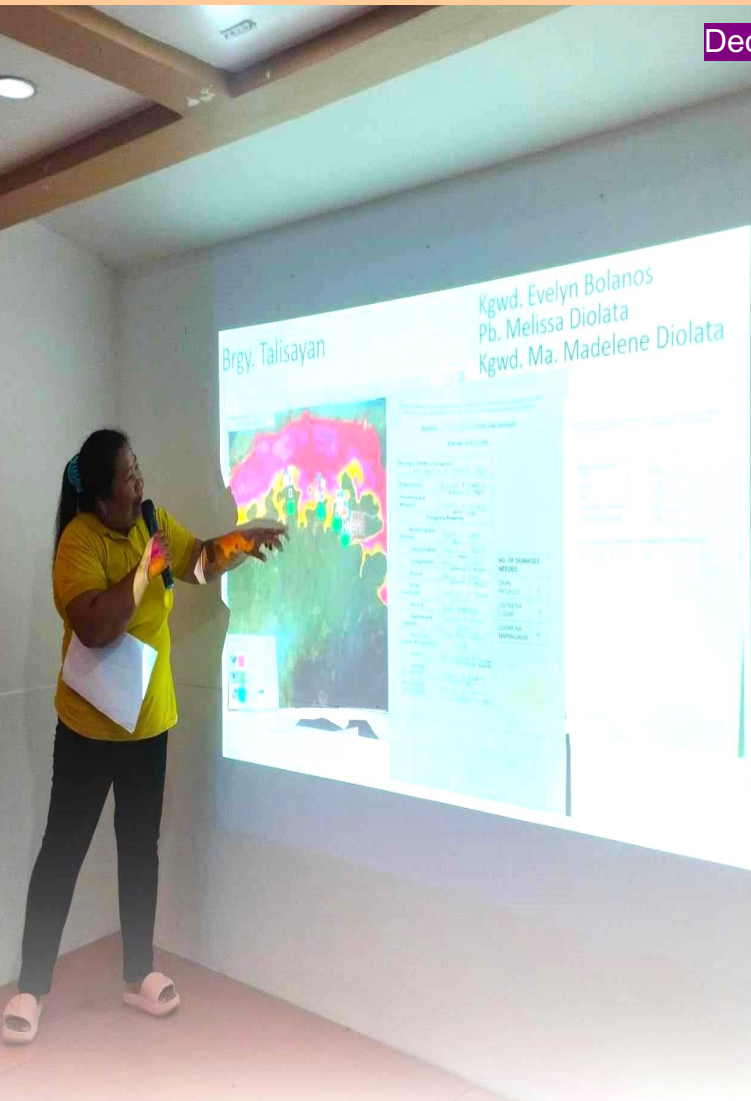


October 27, 2024 Mabuhay, Zamboanga Sibugay by DOST IX

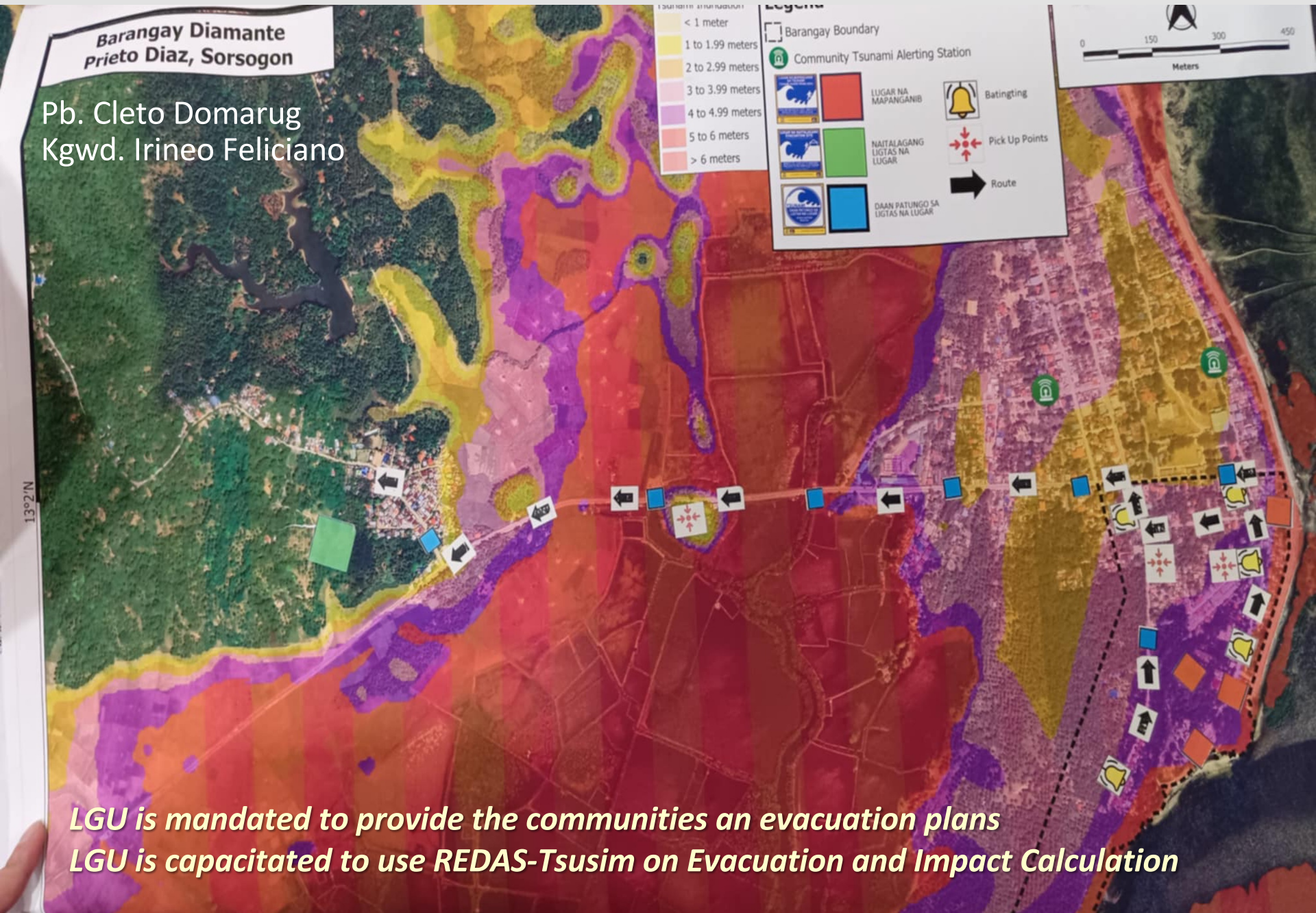


TeWS Prieto Diaz, Sorsogon and Tsunami Evacuation Planning/Workshop

December 2024 by DOST V



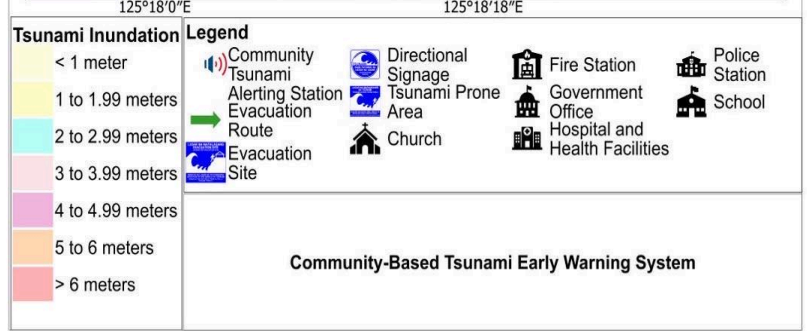
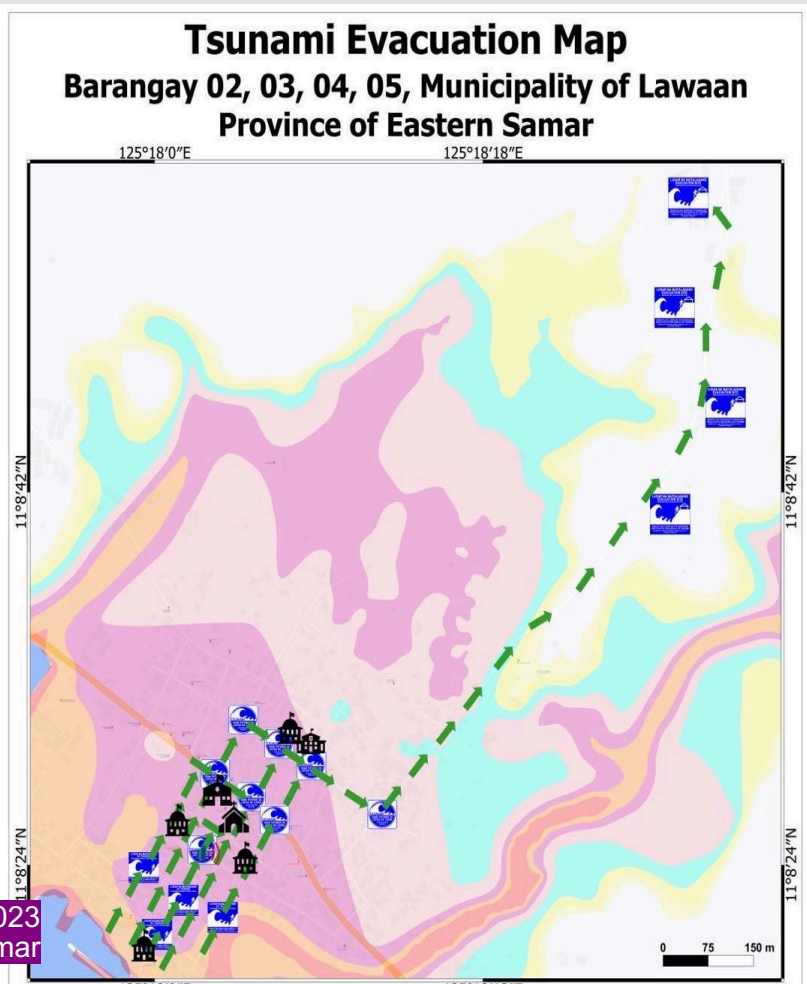
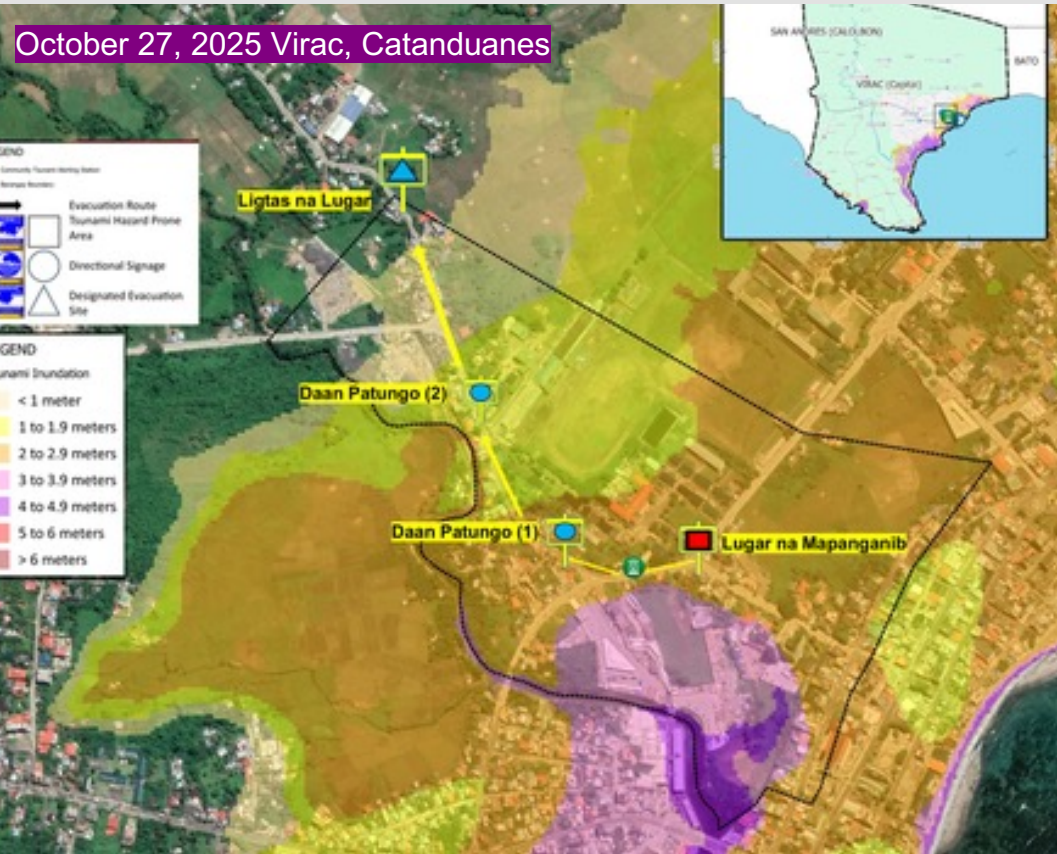
Initial Output of Community Evacuation (Purok or Barangay Scale)



LGU is mandated to provide the communities an evacuation plans

LGU is capacitated to use REDAS-Tsusim on Evacuation and Impact Calculation

Initial Output of Community Evacuation (Purok or Barangay Scale)



Tsunami Directional Signage

Community-Based Early Warning System for Tsunami (CBEWS)

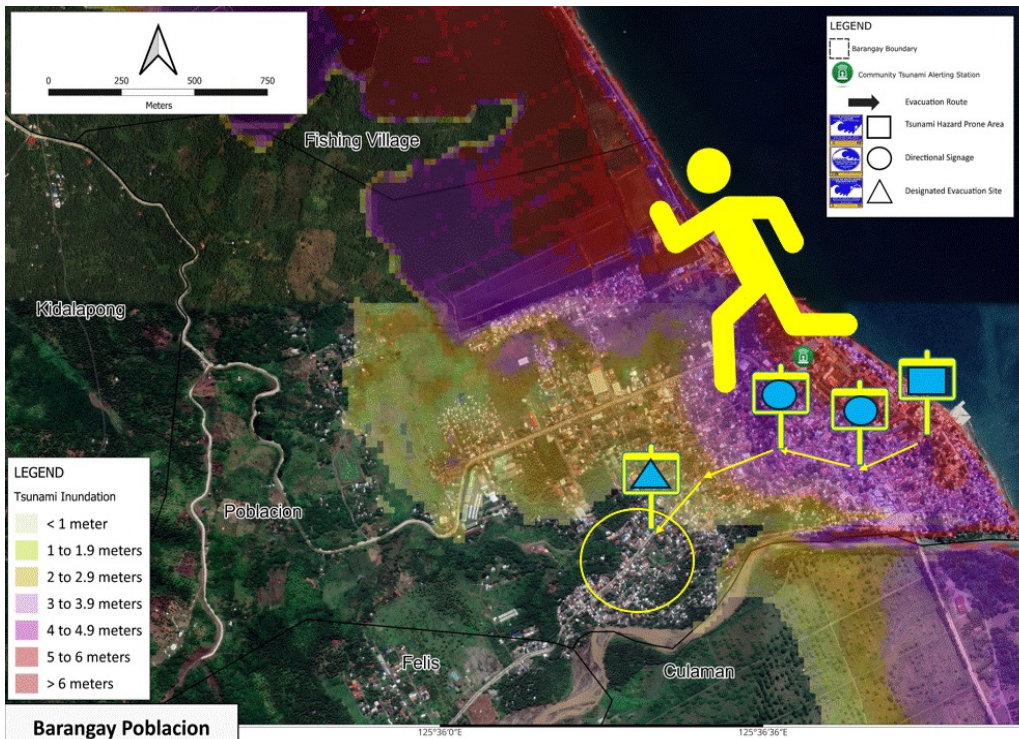
INSTALLED TSUNAMI SIGNAGE

Poblacion, Malita, Davao Occidental



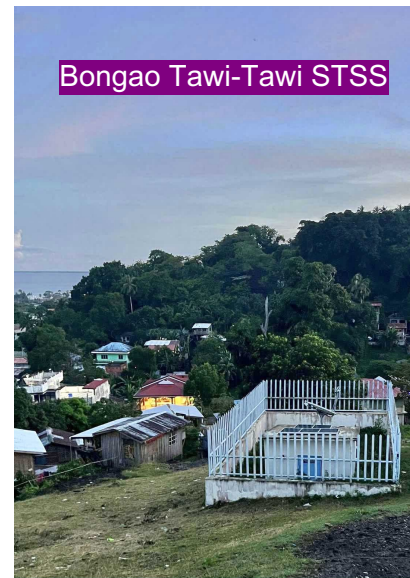
'Poblacion Manay CTAS' and CBEWS by DOST XI (PSTO DavOr) June 2025

'Poblacion Malita CTAS' and CBEWS by DOST XI (PSTO DavOcc) July 2025



BARMM Islands Tsunami Evacuation Planning

November 28, 2024



TeWS Panglima Sugala, Tawi-Tawi

November 29, 2024



TeWS Panglima Sugala, Tawi-Tawi

November 29, 2024

Not yet integrated into TeWS Website:

- Tongsibalo Sibuto CTAS
- Munuk Likod Sapa-Sapa CTAS
- 10 more in BARMM Mainland
- 2 CTAS in Bacacay, Albay
- 1 in Legazpi City

(89) 'Batu-Batu Panglima Sugala CTAS'
by MOST-BARMM

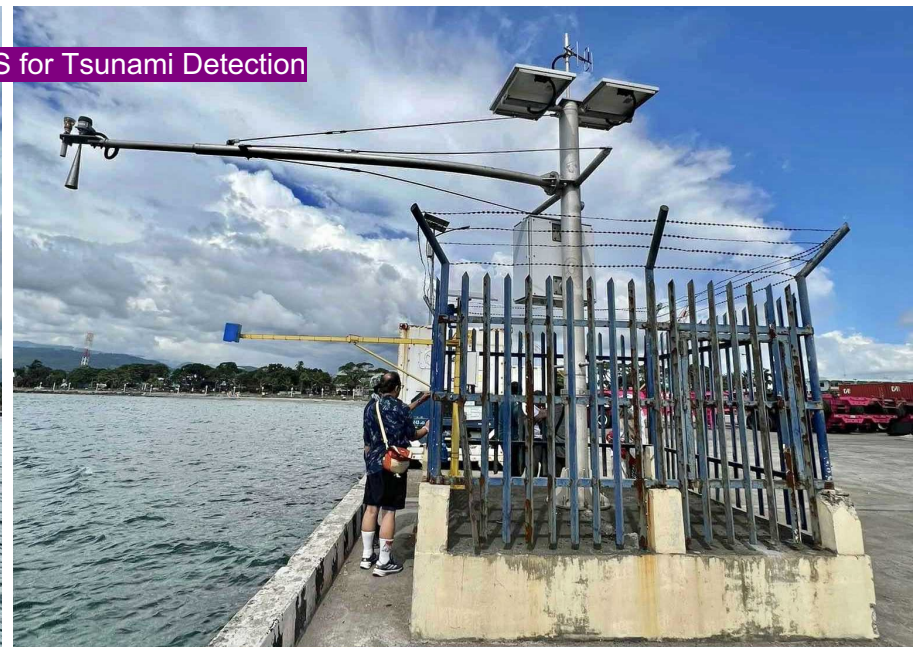


Zamboanga City Tsunami Evacuation Planning

December 4-6, 2024



Zamboanga City SLMS for Tsunami Detection



TeWS Sirawai, Zamboanga del Norte



Virac, Catanduanes Tsunami Evacuation Planning

October 27, 2025



TeWS Virac, Catanduanes

Inauguration: October 28, 2025

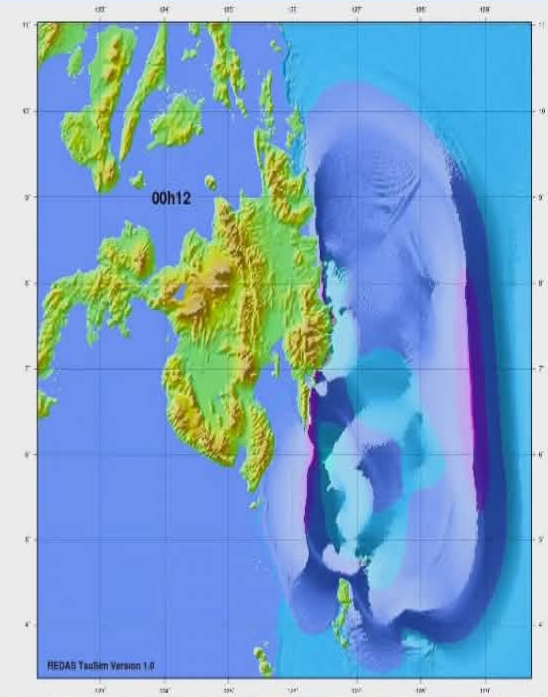


(97) 'San Roque Virac CTAS'



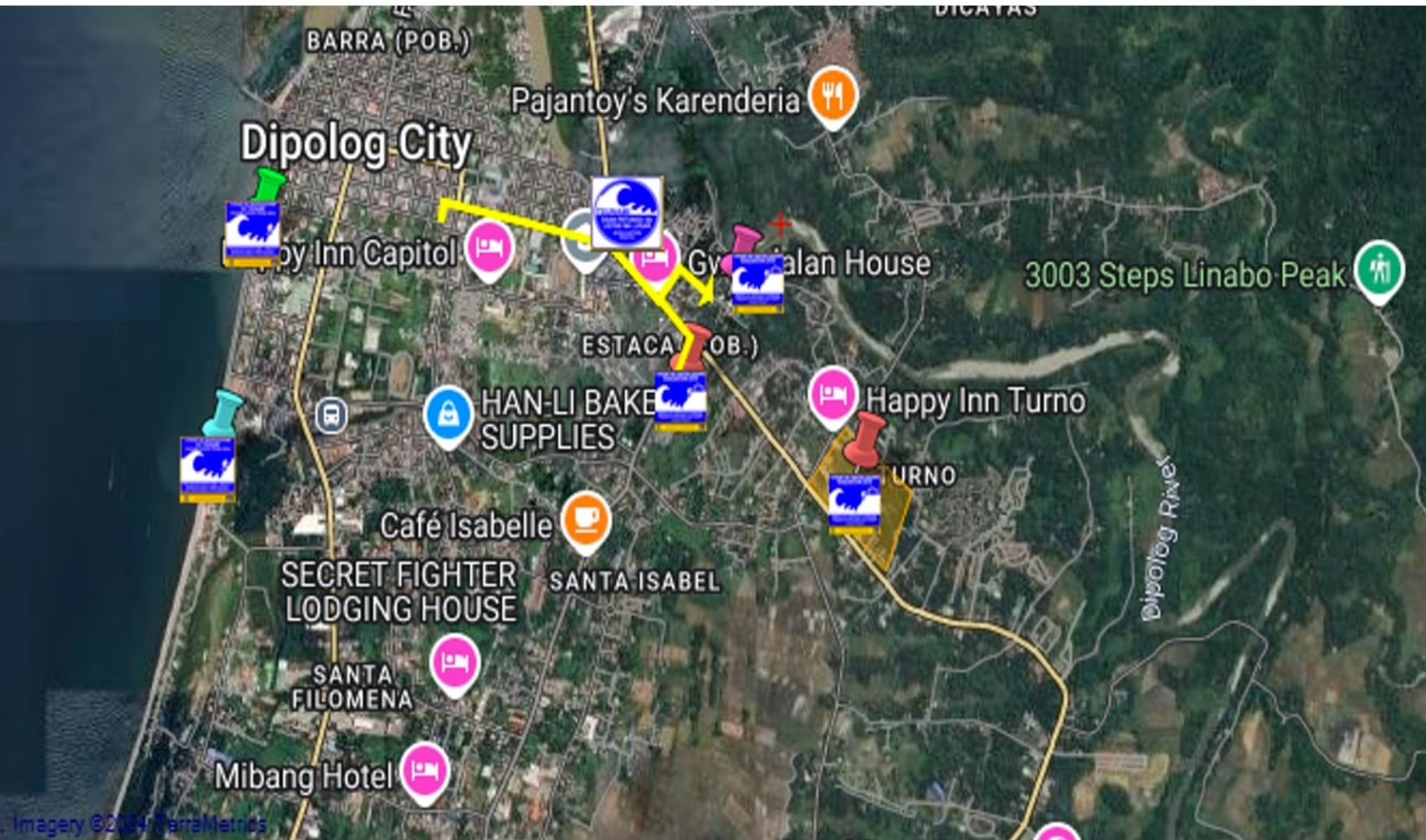
REDAS Tsunami Simulation Module (REDAS-TSUSIM)

REDAS Tsunami Simulation and Impact Module can simulate tsunami hazard, perform simulation and animation, compute for tsunami impacts, and plot tsunami evacuation map.



Tsunami Evacuation Planning

Sample Output done by a REDAS Training Participant



Real-Time Earthquake Monitoring



October 4, 2025

Barangay Bongtud, Tandag City, SDS on REDAS-ETAM



November 4, 2025

M7.4 & M6.8 October 10, 2025 Offshore Davao Oriental (Manay) Earthquakes
M6.0 October 11, 2025 Offshore Surigao del Sur (Cagwait) Earthquake

Timely beginnings

- Four additional CTAS were added by the City of Dagupan to other communities inundated by tsunami. They will inaugurate these on December 13, 2025 simultaneous with the presentation of Evacuation Plans of 15 inundated Barangays. They considered vertical evacuation rather than running 3-5 kilometers crossing bridges in just 15 minutes. Plotting on evacuation map potential 3 storey and above structures is done with the use of REDAS-Exposure Data Module.
- Other than two CTAS in Prieto Diaz, Sorsogon (1 PSTO and 1 PHIVOLCS Projects) and one in Borongan City (without Evacuation Planning), the most recent CTAS facing the Philippine Sea and the Pacific Ocean is the 'San Roque Virac CTAS' in Catanduanes established on October 27, 2025. On the other hand, Legazpi City in Albay has already established 15 CTAS within 2012-2024. Bacacay, Albay has 2 but not yet integrated into TeWS.
- Two CTAS of the communities fronting the Cotabato Trench were established in 2024. The 'San Pedro Pagadian City CTAS' in June and 'Malinao Mabuhay CTAS' in Zamboanga Sibugay in October - another PSTO-CEST Project in 2024.

Timely beginnings

- The first CTAS fronting the Sulu Trench was established in March 2025 as 'San Roque Sirawai CTAS', also a PSTO-CEST Project. This was eventually replicated by MOST-BARMM to communities facing Sulu Sea.
- Four CTAS of Davao Oriental were integrated to TeWS (Boston, Caraga, Manay, Tarragona) from December 2021 to August 2025 benchmarking the intervention of DOST-CEST Project before the M7.4 & M6.8 October 10, 2015 Earthquakes Offshore Davao Oriental. While monitoring the final delivery of evacuation plans, PSTO even monitored the actions made by the LGUs including the action made by a siren trigger lady of Manay and timely sounding of the rest of CTAS in the province. For this work, the PSTO Director was commended by the Secretary of DOST.
- Tandag SLMS was just upgraded on September 30, 2025 and it recorded the tsunami brought by the October 10, 2025 Earthquakes. Likewise, the 'Bongtud Tandag CTAS' was inaugurated on October 1, 2025 (simultaneous with the inauguration of new CDRRMO Head). Evacuation Planning was conducted on the following day. All the learnings from it were once more tested during the occurrence of M6.8 October 11, 2025 Offshore Surigao del Sur Earthquake. Barangay Bongtud of this City was the first Barangay who asked for REDAS-ETAM for near real-time earthquake monitoring.



'Bongtud Tandag City CTAS' October 1, 2025

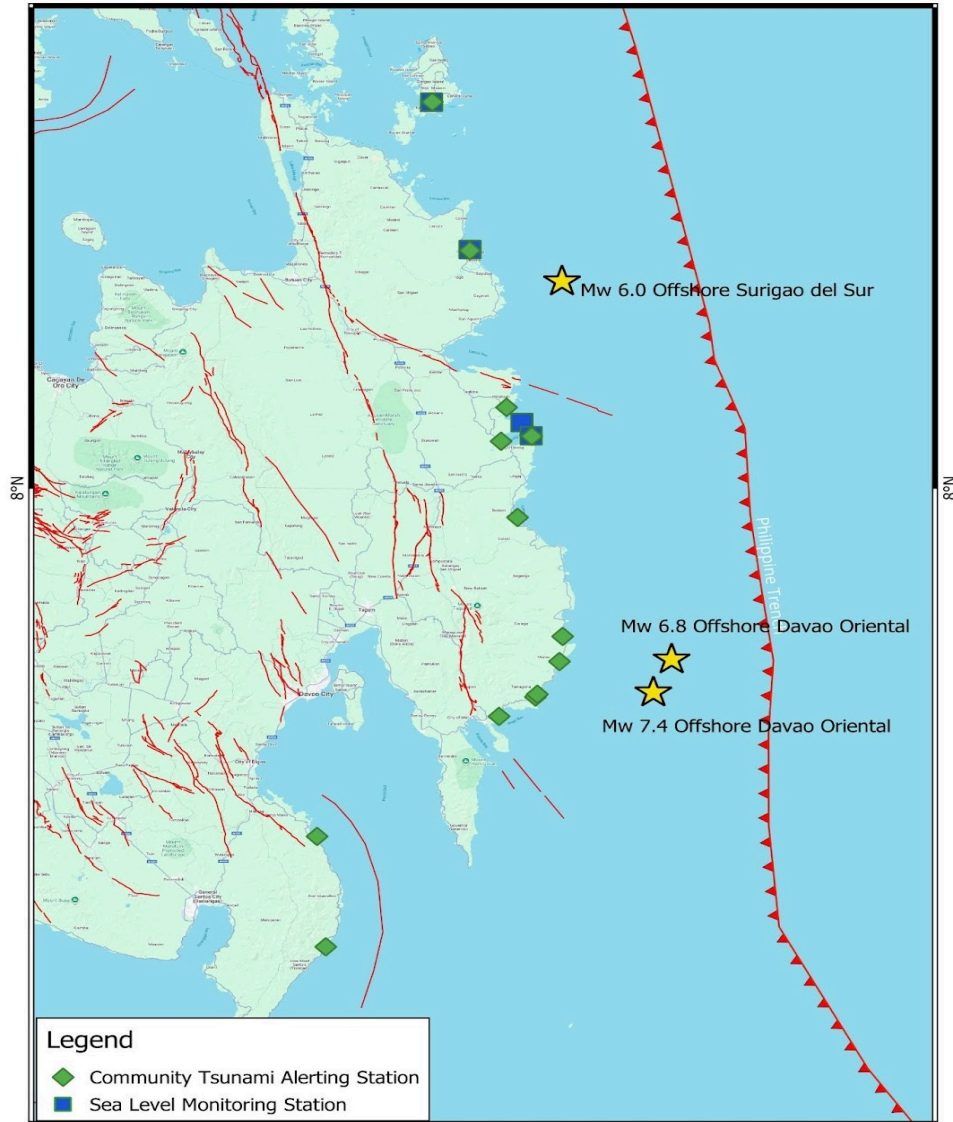




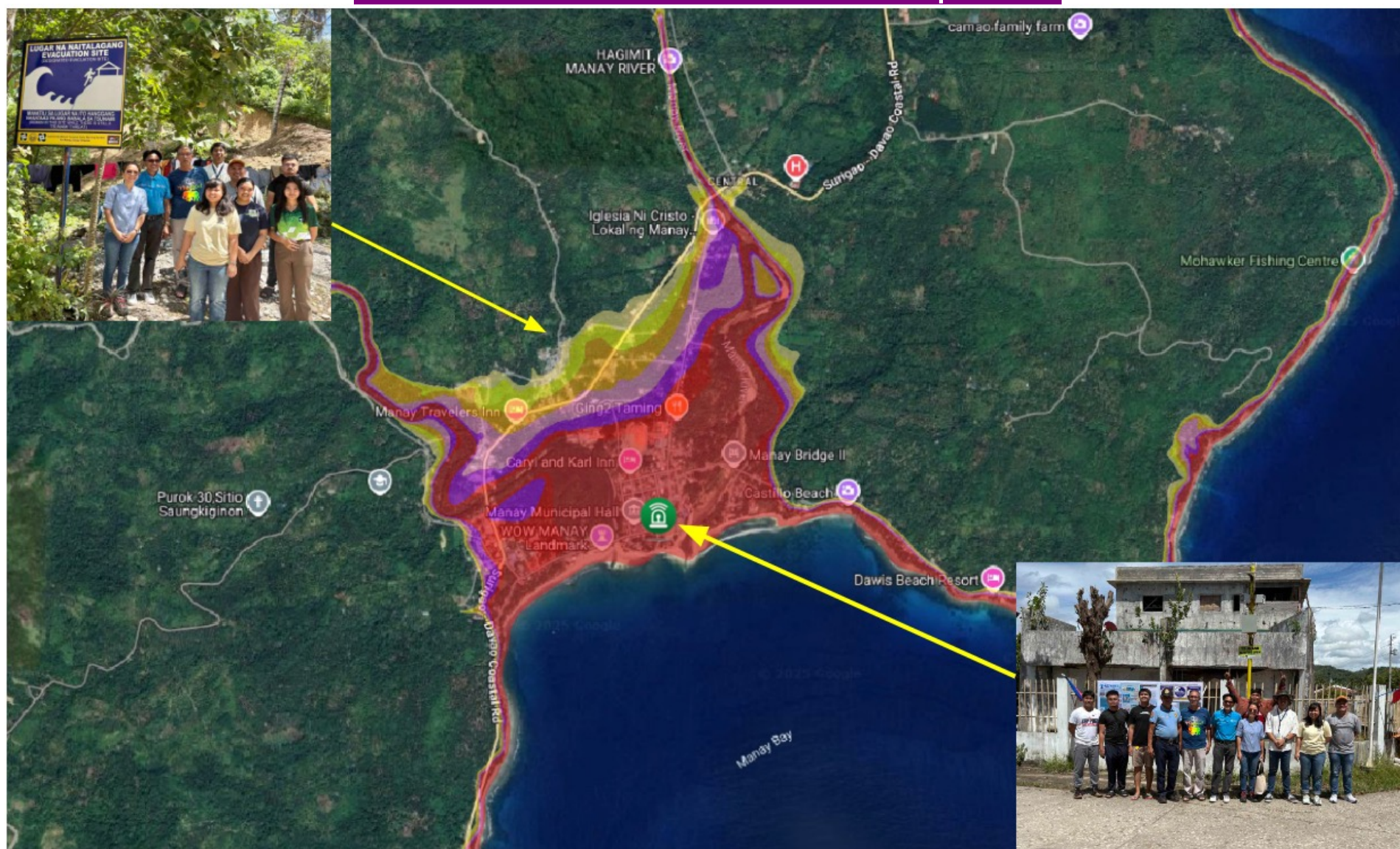


CDRRMO-TANDAG CITY
EMERGENCY HOTLINE NUMBERS
SMART - 0907 299 3793
GLOBE - 0954 158 5718

Actual sounding made by MDRRMO Boston immediately after the M6.8 7:12PM October 10, 2025 Offshore Davao Oriental Earthquake



CBEWS of Poblacion, Manay, Davao Oriental conducted in June 2025 before the M7.4 & M6.8 Earthquakes



Tsunami Inundation Map with the location of 'Poblacion Manay CTAS' as the 92nd of TeWS Philippines and one of the identified safe sites.



Ms. Remedios R. Ajos of MDRRMO Manay, Davao Oriental, the one who activated the siren of 'Poblacion Manay CTAS', specifically on the M6.8 earthquake.

Welcome to Tsunami Ready Communities of the Philippines

