



A PRIMER ON THE 12 APRIL 2017 MAGNITUDE 6.0 LANAO DEL SUR EARTHQUAKE

12 April 2017

What is happening in Lanao del Sur?

At 5:21 AM on 12 April 2017, Wednesday, a moderate earthquake of magnitude 6.0 shook the island of Mindanao. The epicenter is located 13 km northwest of Wao, Lanao del Sur at a depth of 1 km. The earthquake was generated by the movement of a northwest trending active fault in the area. Small-magnitude earthquakes followed afterwards, and as of 3:00 PM of 12 April 2017, 73 aftershocks have been recorded by PHIVOLCS seismic monitoring network.

Based on preliminary intensity reports, the strongest ground shaking was felt at PHIVOLCS Earthquake Intensity Scale (PEIS) VII (Destructive) in Wao, Lanao del Sur and Kalilangan, Bukidnon. Furthermore, it was felt at PEIS VI (Very Strong) in Amai Manabilang, Lanao del Sur; PEIS V (Strong) in Pangantukan, Bukidnon, and Banisilan, Cotabato. It was also felt at PEIS IV in Cagayan de Oro City, Iligan City, Cotabato City, Gingoog City in Misamis Oriental, Matalam in North Cotabato, Valencia and Maramag in Bukidnon, and Davao City. This was felt at PEIS III to I in Kabacan and Arakan in North Cotabato, Quezon and Don Carlos in Bukidnon, Pikit in Cotabato, Lebak in Sultan Kudarat, Kidapawan City, Koronadal City, and Mambajao in Camiguin. Damages to some buildings and roads due to strong ground shaking were reported near the epicentral area. Landslides were also reported in Amai Manabilang (Bumbaran). At the time of writing, there are no reports of casualties.

Large magnitude earthquake has affected Lanao del Sur in the past!

On April 1, 1955, a magnitude 7.5 earthquake was experienced in Lanao area. This earthquake, which is considered to be one of the most damaging historical earthquakes in Lanao del Sur, resulted to about 400 deaths. Strong ground shaking was also felt during this event, resulting to significant damage to infrastructures including a mosque in Tugaya municipality near Lake Lanao. Several houses also collapsed and wharfs were damaged in Zamboanga City and Pagadian City. Liquefaction and landslides were also documented.

Aside from this, several small to moderate earthquakes have also been recorded within the province, with intensities ranging from PEIS IV to VII.

Why do earthquakes occur in Lanao del Sur?

Central Mindanao, including Lanao del Sur, is one of the seismically active areas in the country because of the presence of the western extension of the Mindanao Fault (Cotabato-Sindangan Fault), an active fault that runs from Sarangani province to northwest of Zamboanga Peninsula. Cotabato Trench is also a major source of earthquakes which can affect the region. In addition, there exist other local active faults, which can be sources of small- to moderate-magnitude earthquakes.

Can these present earthquakes indicate volcanic activity?

No. The origin of the 12 April 2017 magnitude 6.0 earthquake and its subsequent aftershocks are clearly tectonic.

What can we expect from the current earthquake activity?

The current available seismic information suggests that the magnitude 6.0 earthquake on 12 April 2017 is the main shock, which caused the strong ground shaking. The succeeding small-magnitude earthquakes are the aftershocks. The aftershocks may continue to occur for several days to weeks, some of which may be felt.

Aside from strong ground shaking, what other seismic hazards are life-threatening?

Landslides, rock falls, and other types of mass movements may occur in mountainous or hilly areas. Liquefaction, manifested by sand boils or lateral spread may affect low-lying, water-logged, sandy areas at the banks of rivers. Tsunami is **not** expected because the source of the 12 April 2017 event is on land. The tsunami threat for Lanao del Sur would come from the movement of the Cotabato Trench, located south of the province. However, Lake Lanao may be disturbed and may result to a phenomenon called *seiche*. *Seiche* is a temporary oscillation in an enclosed body of water such as lakes caused by strong ground shaking. This phenomenon was observed during the 1955 Magnitude 7.5 Lanao Earthquake.

What should be done by the affected communities?

People are reminded to be cautious of houses and buildings and other structures visibly weakened or with signs of damage by the 12 April 2017 earthquake as these may be further damaged by aftershocks. In case of houses and other buildings with visible damage, it is best to contact the Municipal/City Engineering Office for advice. Engineers from the local government, other agencies and organizations should inspect houses and other structures to determine their integrity and recommend appropriate actions to concerned affected groups or individuals. Slopes should be checked for tension cracks that may have resulted from the strong ground shaking. Tension cracks may make slopes more susceptible to landslides. These areas should also be avoided.

The best course of action is preparedness. In case of another felt earthquake, it is recommended that people protect themselves by doing the **“duck, cover and hold”**. In houses and offices, cabinets should be strapped to the walls, and appliances be secured to prevent them from toppling and causing injuries injury to persons.

What is the role of PHIVOLCS?

PHIVOLCS operates and maintains a network of 93 seismic stations spread across the Philippines. Eighteen of these seismic stations are located in Mindanao Island, eight of which are staffed-controlled and are located in Cotabato City, Kidapawan City, Cagayan De Oro City, Bislig City, Surigao City, Dipolog City, Zamboanga City, and General Santos City. PHIVOLCS has also ten remote seismic stations located in Pikit in Cotabato, Valencia in Bukidnon, Sultan Kudarat, Talacogon in Agusan del Sur, Butuan City, Don Marcelino in Davao Occidental, Mati and Cateel in Davao Oriental, Pagadian City and Ipil in Zamboanga Peninsula. Data from these seismic stations are used to determine the locations of earthquakes, as well as the characteristics of the earthquakes generated.

Aside from monitoring the occurrences of earthquakes, PHIVOLCS also provides the public with information on hazards analyses and assessments. As part of its mandate, PHIVOLCS works hand-in-hand with other government agencies in mitigating the damaging effects of earthquakes.

More information about recent earthquakes, volcanic activities and hazard maps can be obtained at PHIVOLCS website at <http://www.phivolcs.dost.gov.ph>, and Facebook (<https://www.facebook.com/PHIVOLCS/>) and Twitter (@phivolcs_dost) accounts. Earthquake observations may also be reported to PHIVOLCS at telephone numbers (02) 929-9254 and (02) 426-1468 to 79, local 124 and 125.