EARTHQUAKE HAZARDS

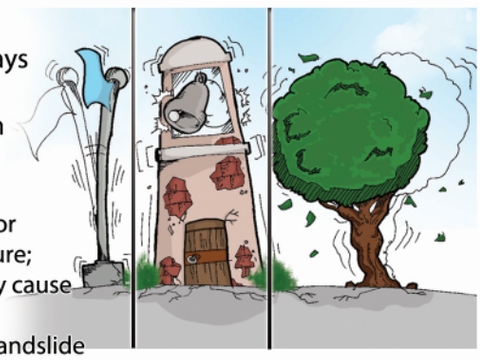
1 GROUND RUPTURE

Deformation on the ground that marks the intersection of the fault with the earth's surface.

Effects: Fissuring; displacement of the ground due to movement of the fault

2 GROUND SHAKING

Disruptive up, down and sideways vibration of the ground during an earthquake.



Effects: Damage or collapse of structure; may consequently cause hazards such as liquefaction and landslide

3 LIQUEFACTION

Phenomenon wherein sediments, especially near bodies of water, behave like liquid similar to a quick sand.

Effects: Sinking and /or tilting of structure above it; sandboil; fissuring

4 EARTHQUAKE-INDUCED LANDSLIDE

Down slope movement of rocks, soil and other debris commonly triggered by strong shaking.

Effects: Erosion; burial and blockage of roads and rivers

5 TSUNAMI

Series of waves caused commonly by an earthquake under the sea.

Effects: Flooding; coastal erosion; drowning of people and damage to properties

Department of Science and Technology
PHILIPPINE INSTITUTE OF VOLCANOLOGY AND SEISMOLOGY
PHIVOLCS Building, C.P. Garcia Avenue, UP Campus, Diliman, Q.C.
Tel. Nos.: +63 2 426 1468 to 79
Fax No.:+63 2 927 4524; +63 2 929 8366
http://www.phivolcs.dost.gov.ph
/PHIVOLCS @phivolcs_dost

Printed November 2015 */JSP/CVV/LDM/JPF/DFD*

EARTHQUAKE and its HAZARDS

Department of Science and Technology
Philippine Institute of Volcanology and Seismology

What is an Earthquake?

An EARTHQUAKE is a weak to violent shaking of the ground produced by the sudden movement of rock materials below the earth's surface.

Where do earthquakes occur?

Earthquakes occur along tectonic plate boundaries and active faults.

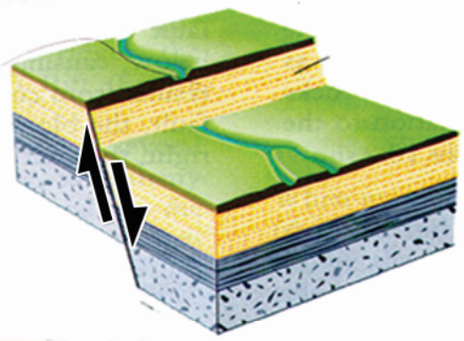
What is a fault?

A **FAULT** is a break, fracture, fissure or zone of weakness where movement or displacement had occurred or may occur again. It may extend hundreds of kilometers across the earth's surface and tens of kilometers downward.

Earthquake generators:

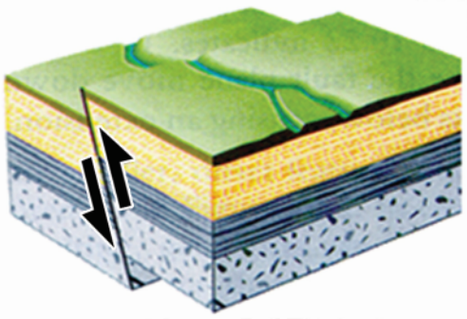
- *An **ACTIVE FAULT** is a fault that has moved within the last 10,000 years. It shows evidence or has documented history of its recent movement.*
- *A **TRENCH** is the deepest portion on the sea floor. It is a manifestation of subduction zone where a tectonic plate moved or is pushed under another tectonic plate.*

Types of Fault



Normal fault

Geologic fault in which the hanging wall has moved downward relative to the footwall. Normal faults occur where two blocks of rock are pulled apart, as by tension.

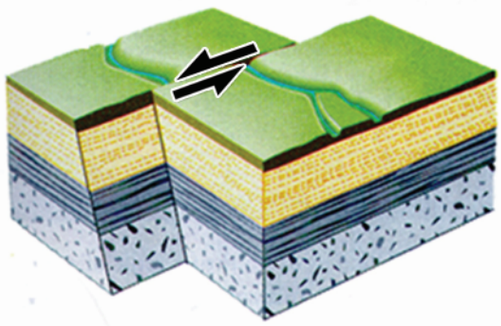


Thrust or reverse fault

Geologic fault in which the hanging wall has moved upward relative to the footwall. Reverse faults occur where two blocks of rock are forced together by compression.

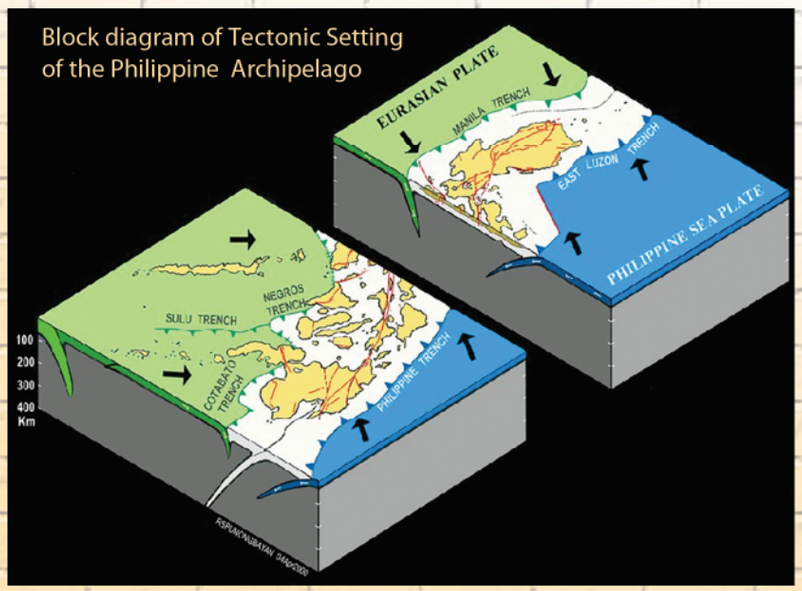
Strike-slip fault

A fault in which surfaces on opposite sides of the fault plane moved horizontally and parallel to the strike of the fault.



Why do earthquakes occur in the Philippines?

The Philippines is situated in a tectonically active region called "**Pacific Ring of Fire**", where numerous earthquakes and volcanic eruptions occur. The archipelago is surrounded by subducting tectonic plates (**the Philippine Sea Plate in the east and the Eurasian Plate in the west**) as manifested by offshore earthquakes along trenches (**Philippine Trench, East Luzon Trough, Manila Trench, Negros Trench, Sulu Trench, and Cotabato Trench**). Most of the inland earthquakes are caused by the movement along the **Philippine Fault**, a **1,300-km-long fault**, that traverses from Ilocos Region in the north to eastern Mindanao in the south. Movements along other active faults are also responsible for the present-day high seismicity of the Philippines.



*An average of 20 earthquakes are recorded daily in the Philippines. However, most of these earthquakes are unfelt and can only be detected by an instrument called **SEISMOGRAPH**.*