VOLCANIC ACTIVITY

The word volcano is derived from Latin word **"Vulcanus"** means "burning mountain". Vulcanus was originated from **"Volcan"** that was the Roman god of fire.

- Definition:

An opening in the earth's crust from which molten lava rock fragments, ashes, dust, and gases are ejected from below the earth's surface.

- Magma:

Magma is the name for that molten rock when it's below ground. Scientists call it lava once that liquid rock erupts from the ground and may start flowing across Earth's surface. It's still "lava" even after it's cooled and solidified.

How Do Volcanoes Form?

Deep inside the earth, between the molten iron core and the thin crust at the surface, there is a solid body of rock called a **mental.** When rock form the mental melts, moves to the surface through the crust, and releases pent-up gases, volcanoes erupt. Extremely high temperature and pressure cause the rock to melt and become liquid rock or **magma.** When a large body of magma has formed, it rises through the denser rock layers towards earth's surface. Magma that has reached the surface is called **lava.**

Classification of Volcanic Activity

Volcanic activity classified into three categories that are following.

- Active:

Active volcanic activity in which volcano is erupting or has repeatedly erupted in a short period of time.

- Dormant:

Dormant is a volcano that has not erupted for a considerable length of time.

- Extinct:

Extinct is a volcano that shows no any evidence of erupting again.

Where Volcanoes Take Place?

Most volcanoes are formed on land, but there are some volcanoes that are on the ocean floor. Some of these volcanoes emerge from the water because they are very high. Volcanic eruptions occur only in certain places and do not occur randomly. This is because the Earth's crust is broken into a series of slabs known as tectonic plates. These plates are rigid, but they "float" on a hotter, softer layer in the Earth's interior. As the plates move, they spread apart, collide, or slide past each other.

- Volcanoes take place at destructive plate boundaries and constructive plate boundaries.
- 1,500 active volcanoes exist across our planet, according to scientists at the U.S. Geological Survey (USGS).
- About 500 volcanoes have erupted since humans have been keeping records.
- Of all volcanoes that have erupted in the past 10,000 years, 10% reside in the United States.
- Most of them exist in Alaska (Aleutian Island chain), in Hawaii and in the Cascade Range of the Pacific Northwest.
- **Mount Kilauea, in Hawaii, is the most active volcano on Earth because it has been erupting since 1983.**

Volcanic Eruption

Volcanic eruptions happen when lava and gas are discharged from a volcanic vent.

Why Does a Volcano Erupt?

Volcanoes are often cone-shaped, but they can take other shapes too. The melted rock that spills out of the crater on the top of the volcano is called lava. The lava destroys everything in its path because it is very, very hot. A volcano erupts when magma and gases find a way to escape, so they burst to the surface through a vent. An eruption can be quite gentle or very violent.

❖ Types of Eruption

There are some types of volcanic eruption which are following.

1. Hydrothermal Eruption:

Hydrothermal eruption is an eruption driven by the heat in hydrothermal systems. Hydrothermal eruptions pulverize surrounding rocks and can produce ash, but do not include magma. These are typically very small eruptions

2. Phreatic Eruption:

Phreatic eruption is an eruption driven by the heat from magma interacting with water. The water can be from groundwater, hydrothermal systems, surface runoff, a lake or the sea. Phreatic eruptions pulverize surrounding rocks and can produce ash, but do not include new magma.

3. Phreatomagmatic Eruption:

An eruption resulting from the interaction of new magma or lava with water and can be very explosive. The water can be from groundwater, hydrothermal systems, surface runoff, a lake or the sea.

4. Lava:

Lava is molten rock erupted at the ground surface. When molten rock is beneath the ground, it is called magma.

- **Lava flows** are the effusive (non-explosive) outpourings of lava, and usually flow slower than walking pace.
- **Lava fountains** are a fountain of runny lava fragments from a vent or line of vents (a fissure). They can form spatter piles, and if the fragments accumulate fast enough, they can form lava flows.
- **Lava domes** are mounds that form when viscous lava is erupted slowly and piles up over the vent, rather than moving away as a lava flow. They are generally caused by viscous, thick, sticky lava that has lost most of its gas. They can range in volume from a few cubic meters to cubic kilometers.

5. Strombolian and Hawaiian eruptions:

These are the least violent types of explosive eruptions. Hawaiian eruptions have fire fountains and lava flows, whereas Strombolian eruptions have explosions causing a shower of lava fragments.

6. Vulcanian eruptions:

Vulcanian eruptions are small to moderate explosive eruptions, lasting seconds to minutes. Ash columns can be up to 20 km in height, and lava blocks and bombs may be ejected from the vent.