

Volcanoes

WHAT ARE VOLCANOES?

The term *VOLCANO* signifies a mountain or hill with an opening or vent from which gaseous liquid or solid materials from the earth's interior are ejected. The term is also used for mountains, hills, or craters formed by the accumulation or removal of materials during past volcanic events even if no active vent is presently existing.

WHAT IS A VOLCANIC ERUPTION?

This is the process wherein volcanic materials such as lava, fragmented rocks or gases are emitted or ejected through a crater, vent or fissure on to the earth's surface to form new deposits.

WHERE ARE VOLCANOES IN THE CARIBBEAN?

The Caribbean has several volcanoes distributed all over the Region. Those that been recorded as having erupted are classified as active volcanoes. The others are classified as inactive. Presently, the most active is the [Soufriere Hills Volcano](#) in **Montserrat**.

EXPECTED HAZARDS

There are several processes that occur on the slopes of the volcano that pose hazards to man and his environment. Most of the hazards are directly caused by volcanic eruptions.

- **BLASTED PROJECTILES:** Large projectiles can damage buildings; if these are hot they can start fires.
- **MUD FLOWS (lahars):** Frequently accompany volcanic eruptions and can be lethal. Lakes can mix with volcanic rock and debris to form a near-solid flow which engulfs all in its path.
- **PYROCLASTIC FLOWS:** Mixtures of hot gases, ash, fine pumice and rocks; danger lies in the density and temperature of the ash and rock fragments. Pyroclastic flows can move at very high speeds, possibly over 100 km/h. Hazards include body surface burns, inhalation injuries and asphyxia.
- **GASEES:** These may be asphyxiants which are concentrated near the volcanic crater or fissure or respiratory irritants which are more dispersed and can be harmful at lower concentrations.
- **LAVA FLOWS:** These are flows of extremely hot molten rocks extruded by the volcano. The viscosity and high temperature make these flows very dangerous and they are capable of destroying all in their path.
- **LOCAL EARTHQUAKES:** Possible loss of human life and property.

- *TSUNAMIS*: Tsunami is Japanese for "tidal wave", the seismic wave that can hurtle across oceans at up to 600 miles per hour (800 km/hour). Occurrence is unpredictable and can destroy coastlines.

LIKELY IMPACT

The effects that can be expected from these are the damage and injury or death by impact, incineration, burial and bulldozing. Another hazard that is also directly related to volcanic eruption is the fall of volcanic materials ejected from the crater.

EMERGENCY ACTION

Volcanic eruptions are preceded by signs, some of which are not detected by instruments, nor observed by Volcanologist.

The following are some points that should be taken into account to effectively respond to a volcanic eruption:

Community Preparation

BEFORE THE ERUPTION

- Demarkation and evacuation of areas of risk.
- Formulation of and familiarization with search and rescue plans.
- Preparation of hospital emergency plans to cope with large influx of patients with burns, lung damage and trauma.
- Identification of facilities to collect and analyse ash for toxic elements and drinking water quality.
- Facilities and equipment for monitoring air.
- Plans for procurement of emergency supplies.
- Report any and all unusual physical changes around volcanoes to the Seismic Research Unit, e.g. the drying up of vegetation, rumbling sounds, earthquakes, landslides and other possible abnormalities.

DURING THE ERUPTION

- Pay attention to Warnings, which would include evacuation notices and escape from area as quickly as possible.
- Listen to the radio for information and advice.
- Find shelter, but NOT in a building with low-pitched or flat roof, if heavy ash is falling.
- Avoid basements and closed spaces where gases may accumulate.
- Wear protective clothing over head and body if you have to move in an ash shower.
- Breathe through a handkerchief.
- Always carry a flashlight, even during the daytime.

MITIGATION MEASURES

- Establish permanent danger zones (4 to 6 km radius circle) around the summit of active volcanoes.
- Educate population about Volcano risks.
- Improve Warning and Evacuation Systems.
- Identify resources needed for emergency response.

VOLCANOES IN THE CARIBBEAN

Soufriere Hills Volcano

While Montserrat's Soufriere Hills Volcano is the only one in the region that is currently erupting, the volcano known to have erupted most frequently this century is **Kick 'em Jenny**, an undersea volcano located about 8 km north of Grenada. Kick 'em Jenny is known to have erupted at least eleven (11) times since it was first identified in 1939

On 25 June 1997, pyroclastic flows from an eruption resulted in the first deaths directly caused by the volcano. Ten (10) people were confirmed dead while another 10 were missing and presumed dead.

On 17 July 1995, the Soufriere Hills Volcano in Montserrat began erupting. The severity of eruptions progressively increased and two years later, the volcano had made most of the island uninhabitable. It also caused severe disruption to the economic and social life of the island, resulting in more than half the population leaving.

On 8th May 1902, Mt Pelée, in Martinique erupted. A glowing avalanche (pyroclastic flow) from the eruption destroyed the town of St Pierre and its 28,000 inhabitants. Only one person, a prisoner, survived.

In 1902, the Soufriere volcano in St Vincent erupted. The eruption began on 6th May, 1902 and continued until 30th March, 1903. 1,565 people were killed and extensive damage was done to agriculture in the areas around the volcano. The Soufriere volcano erupted again in 1979. Between 2001, Kick'em Jenny also showed signs of activity which placed the surrounding islands on yellow alert.

The Caribbean has many volcanoes and has suffered the consequences of volcanic eruption on several occasions.

Additional Sources of Information

[Montserrat Volcano Observatory](#)

[Seismic Research Unit](#) (University of the West Indies)