

Volcanoes Guided Notes – Teacher Edition

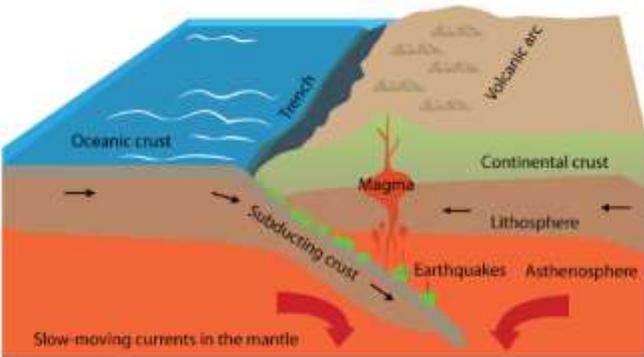
The Formation of Volcanoes

_____ are not just ordinary mountains. Some of them can _____ which can be very dangerous and deadly. But how are these volcanoes formed? What are the processes involved in its formation?

A _____ is a mountain or a hill with an opening where _____ is pushed out into the Earth’s surface with immense force. As soon as magma reaches the Earth’s surface, it is called _____. Lava can be as hot as _____. Aside from these, _____ and _____ can be ejected onto the surface during eruptions.



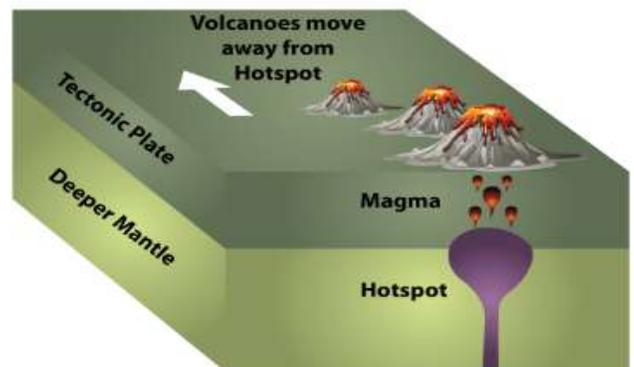
Converging plate boundary with a subduction zone



Most of the volcanoes on the Earth’s surface are formed along the boundaries of the _____. In _____ where tectonic plates _____, the much denser crustal plate is pushed below the less dense plate. The crust being pushed is destroyed in _____.

Convergent plate boundaries cause the formation of _____. When these plates sink deep into the Earth, temperatures and pressures rise, causing water to be released from the rocks. _____ is formed as water reduces the melting point of the overlying rock.

Another way volcanoes are formed is through _____. A “_____” is an area in the mantle where heat rises as _____ - large parcels of hot air rising from the surface - from deep in the Earth. The rise in temperature and lower pressure at the base of the tectonic plates helps in the melting of rocks. This hot and semi-liquid rock called magma, rises up through the cracks, and erupts, forming volcanoes. The tectonic plate slowly moving over the stationary hotspot causes the formation of chains of volcanoes such as the _____.



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Parts of a Volcano

_____ - hot and semi-liquid rock found beneath the Earth's surface.

_____ – the most prominent part of a volcano, formed by the accumulation of volcanic materials.

_____ – a flat piece of rock that is formed when magma hardens in a crack in a volcano

_____ – mouth of a volcano. A steep-walled depression at the peak of a volcano.

_____ – a cylindrical channel connecting the crater to the magma chamber. This is an opening in the Earth's surface where volcanic materials escape.

_____ – the side of a volcano.

_____ – this is magma that has reached the Earth's surface when a volcano erupts. It solidifies when it cools.

_____ – an underground pipe or passage where magma travels through.

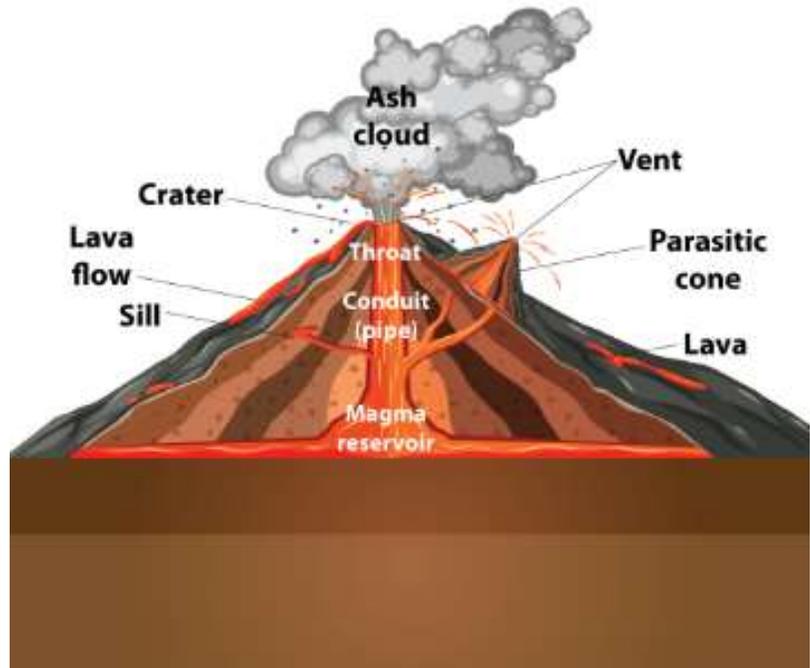
_____ - the highest point or apex of a volcano.

_____ – part of the conduit where volcanic ash is ejected

_____ – particles of lava smaller than 2 millimeters blown up into the air during volcanic explosions.

_____ – a cloud of volcanic ash formed by volcanic explosions.

Cross-section through a Volcano



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Types of Volcanoes

Types of volcanoes can be classified according to the composition and shape of the cone, and its activity.

According to Shape and Composition

Shield Volcano

_____ have gently sloping sides and a wide base. Its cone is made up of _____ that solidified after a _____. The best examples of these volcanoes are _____ and _____ found in the _____. They are known to be the world's largest active volcanoes rising _____ above sea floor.



Mauna Loa



Mauna Kea

Cinder Cone Volcanoes

_____ are usually small, with a height of around _____, have a _____, and have a very _____. These types of volcanoes are built by loose fragments called _____, and are formed by _____. These eruptions ejected lava into the air which solidifies into small pieces of _____ called _____ when they land. Some examples of cinder cones are _____ in Mexico, _____ in Arizona, USA, and _____ in the East Indies.



Mt. Paricutin



Sunset Crater



Mt. Pelée

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Stratovolcano or Composite Volcano

_____ are composed of layers of _____, and are more _____. They are formed when volcanic eruptions vary between _____, and _____. These types of volcanoes are formed from _____ that does not flow easily. During explosive eruptions, a massive volume of _____ are ejected. These types of volcanoes will most likely have explosive eruptions due to _____. Examples of composite volcanoes are _____ in Italy, _____ in Japan, and _____ in the Philippines.



Mt. Vesuvius



Mt. Stromboli



Mt. Fuji



Mt. Mayon

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According to Activity

Active Volcano

A volcano is considered to be an _____ If it has a recent history of eruptions, is most likely to erupt again, shows regular signs of activity like _____, _____, or is _____. An active volcano has a record of eruptions within _____. _____ in Hawaii, _____ in the Philippines, _____ in Italy are some examples of active volcanoes.



Mauna Loa Eruption



Mt. Taal Eruption



Mt. Vesuvius Eruption

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Dormant Volcano

A volcano is considered to be _____ if it has not erupted over a period of time or has entered a long period of inactivity but may still erupt in the future. According to seismologists, these types of volcanoes have a greater chance of having _____ in the future. Volcanoes that haven't erupted over a long period of time may cause _____ - _____ to people and surrounding areas.



Mt. Helens Eruption in 1980

In May 1980, _____ erupted after _____ of being inactive. _____ in the Philippines had its hazardous eruption in June 1991 after _____ of being dormant. _____ in Hawaii last erupted in _____ but it doesn't mean it won't happen again given the fact that there are recorded earthquake activities in the area.



Mt. Pinatubo Eruption in 1991

Extinct Volcano

Volcanoes that have not shown any signs of activity over a long period of time or have not shown any record of eruptions in the past thousand years are considered _____. _____, the tallest mountain in the United Kingdom, _____ in the Philippine Sea, and the _____ in the Northern Pacific Ocean are some examples of extinct volcanoes.



Ben Nevis



Hawaiian -Emperor Seamount Chain

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Types of Volcanic Eruptions

_____ take place when pressure from the _____ forces magma up through the _____ and out of the _____. The type of volcanic eruption varies, each one can go from _____. The type of eruptions can be determined by the _____, and the _____.



Mt. Helens Eruption in 1980

Explosive or Violent Eruptions

_____ emit massive amounts of materials into the air and can last for several hours or even days. Pieces of _____ called _____ are formed when the _____ that escapes is torn into shreds during explosions. _____ are called _____, named after _____, a natural philosopher. Volcanic activity is affected by the _____. The more _____ magma has, the more difficult it is for gases to escape from the volcano, causing _____. This releases massive volumes of _____.



Mt. Pinatubo Eruption in 1991

Non-explosive or Quiet Eruptions

_____ has low silica content. This type of magma makes it easier for gases to escape. This results in a _____ where lava gently flows into the Earth's surface. Examples of these eruptions are common in _____ and _____.



Mauna Kea



Mauna Loa

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Hazards of Volcanic Eruptions

_____ bring _____ to both people and property.



_____ pose serious _____ and _____ to animals, agriculture, people, and properties. Breathing volcanic ash like _____, _____, and _____ can lead to _____. Huge amounts of _____ in the _____ lead to lower surface temperature promoting _____.

Since _____ is heavier than air, the gas may flow into _____. This can put people and animals at serious risk. More than _____ in the

air you breathe may cause _____, _____, _____, and _____. When this exceeds _____, this may lead to _____ and even _____.

Lava destroys everything in its path - fields, vegetation, forests, and more. Not only does it destroy properties, but it also results in _____. It can be life-threatening too!

_____ or _____ looks like rolling wet concrete and is formed when _____, _____, and _____ are mixed with water. This flows down the slopes of a volcano and then enters a river valley. Lahar moves at a _____ and can travel through _____ and _____ destroying and burying everything in its path. It can bury houses and other structures it passes by.



Volcanic eruptions also reduce _____, thus reducing the _____. _____ and _____ are injected into the _____ blocking the incoming sunlight thus reducing the input of heat energy to Earth.