

Volcanoes

What is a volcano?

What causes a volcano to form?

How is magma and lava different?

What are some land features created by volcanoes?

What are the parts of a volcano?

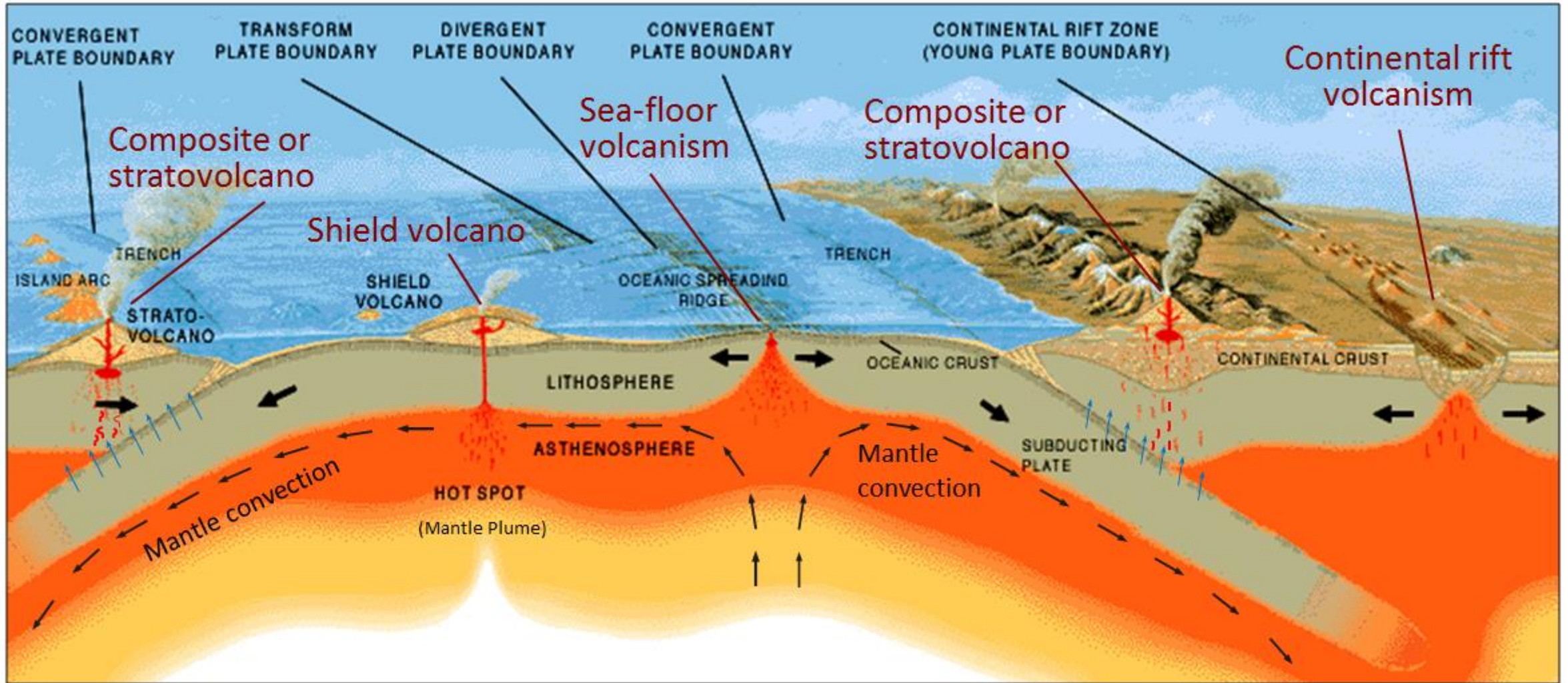


What is a Volcano?



Weak spot in the
crust where
magma comes to
the surface

What causes volcanoes to form?



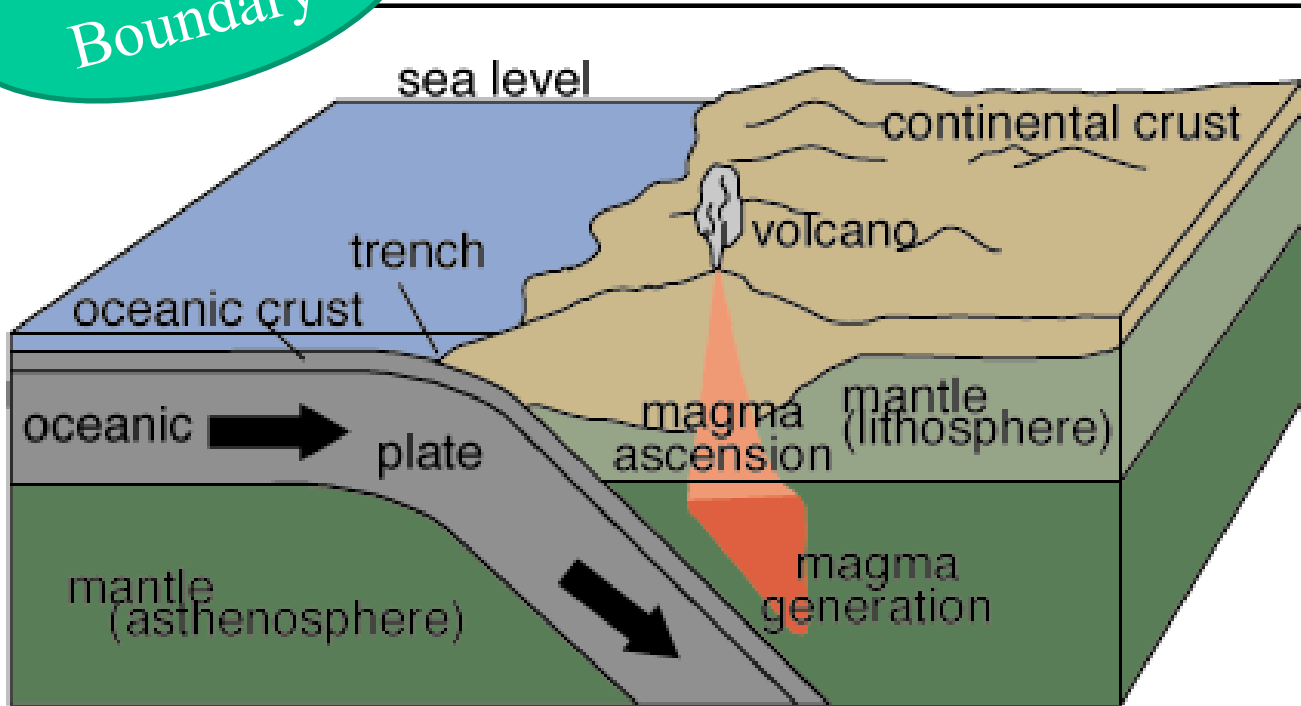
- Convergent Boundary

- Divergent Boundary

- Hot Spots

What causes volcanoes to form?

Convergent
Boundary

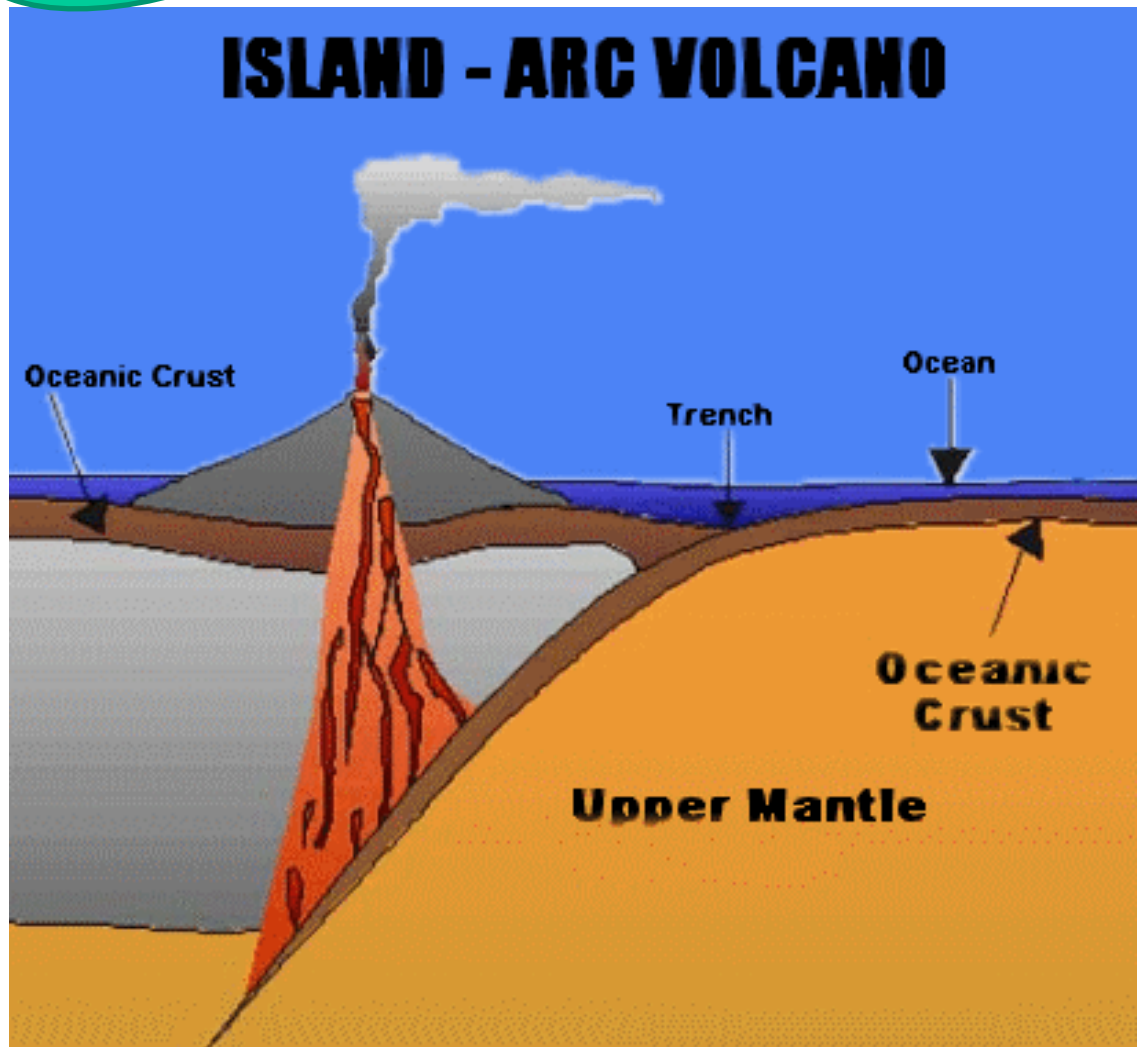


Magma is generated at subduction zones where dense oceanic plates are pushed under lighter continental plates.

A **subduction zone** is when two tectonic plates collide, also known as a **convergent boundary**. One plate slides on top of the other while the other is pushed down. Pressure causes stored magma to squeeze up between the two plates.

Convergent
Boundary

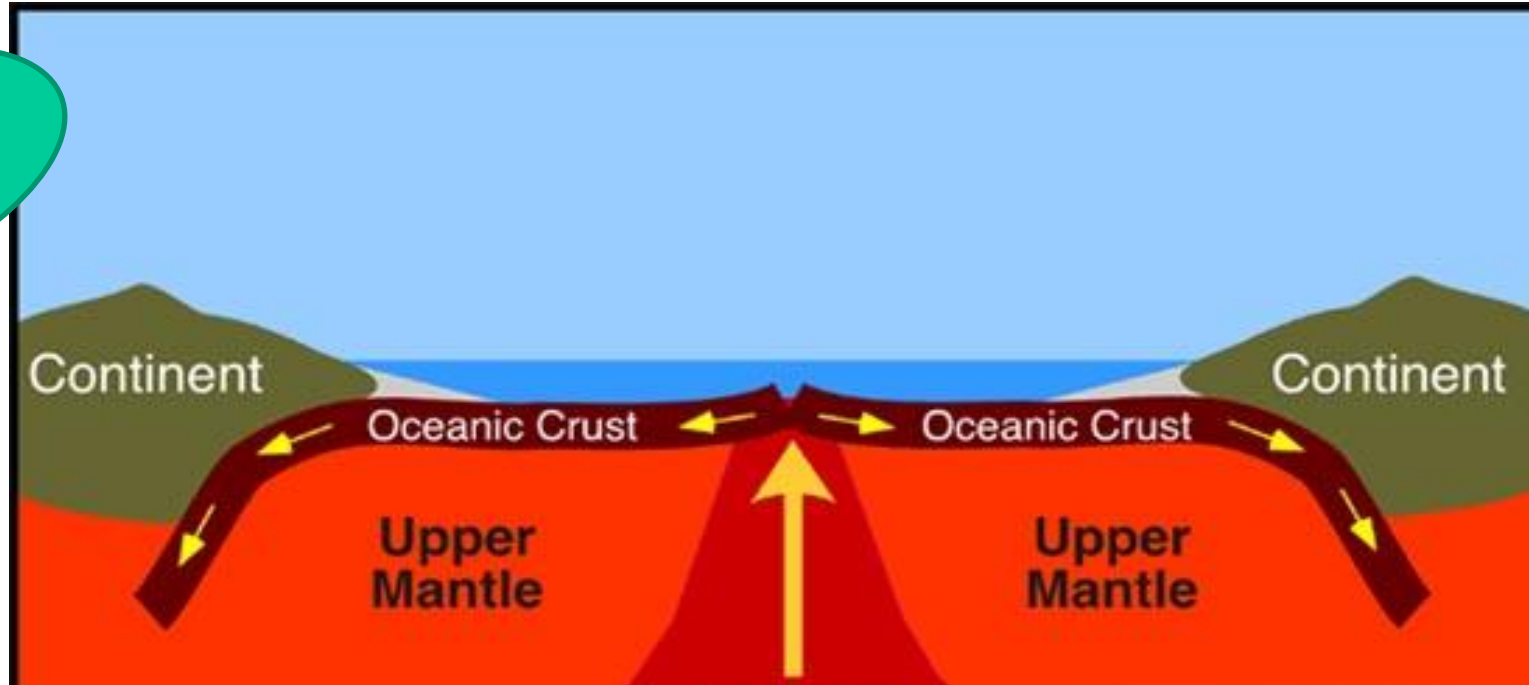
What is an Island Arc?



A chain of volcanic islands or mountains formed as an oceanic tectonic plate subducts under another oceanic tectonic plate causing magma to rise to the surface.

What causes volcanoes to form?

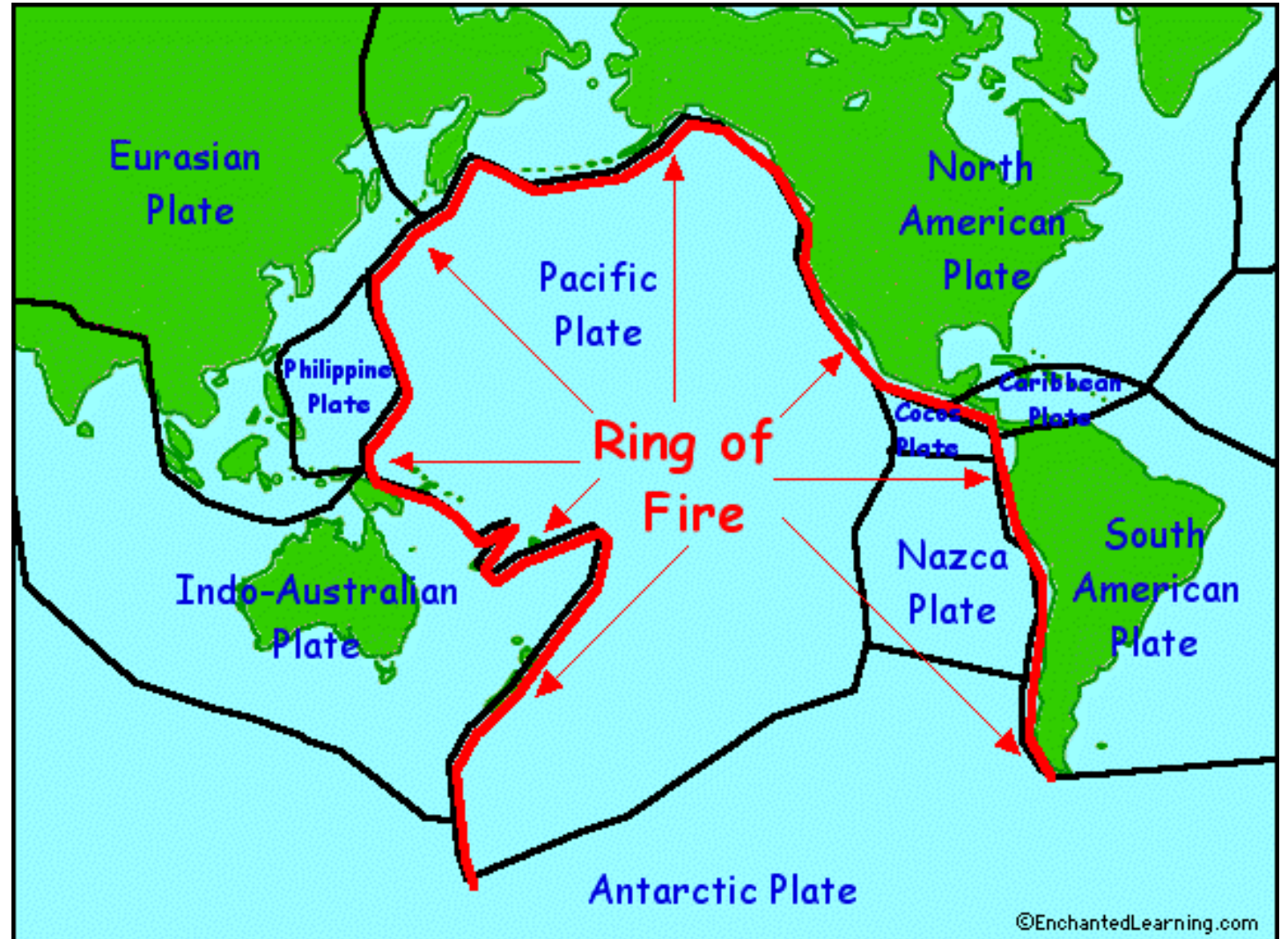
Divergent
Boundary



The mid-ocean ridge is a mountain range in the ocean that is caused by divergent plate boundaries. When the plates move apart, magma rises and cools.

What is the Ring of Fire?

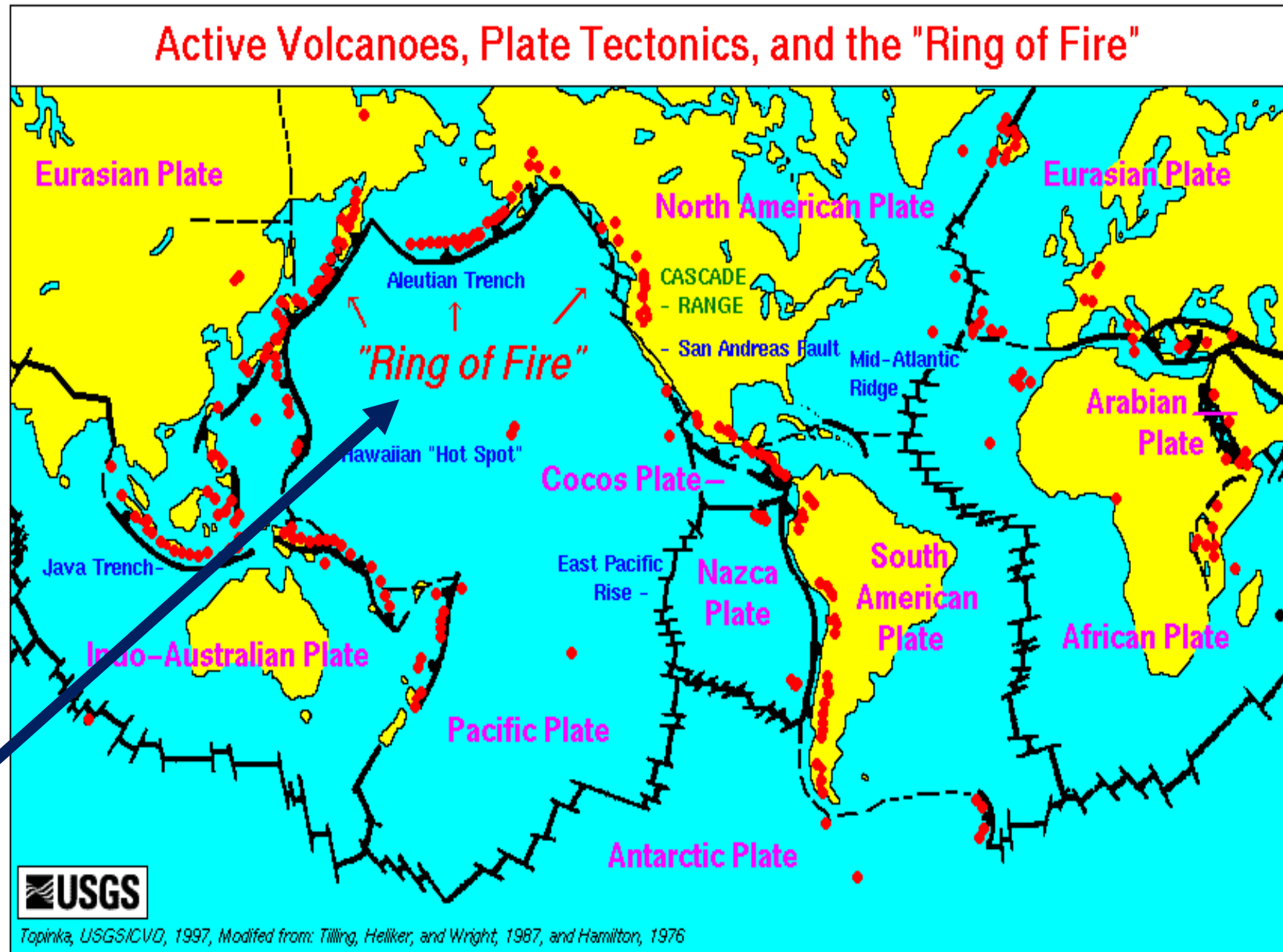
Major Volcano Belt formed by many volcanoes that rim the Pacific Ocean





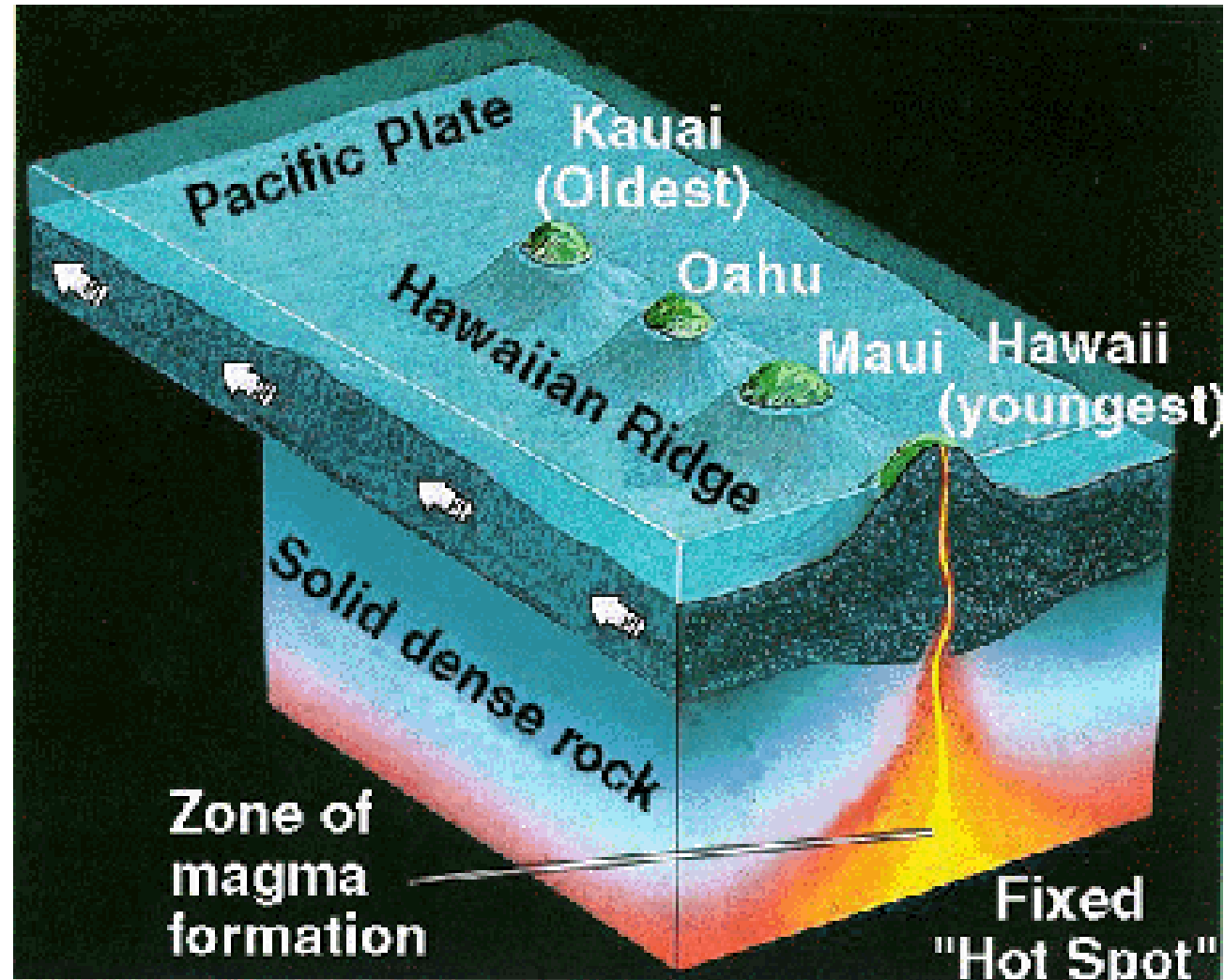
Sakurajima is a stratovolcano on the island of Kyushu, Japan. It is part of the Pacific Ring of Fire.

The **red** dots represent **volcanoes**. Notice all the red dots along the **Ring of Fire**.

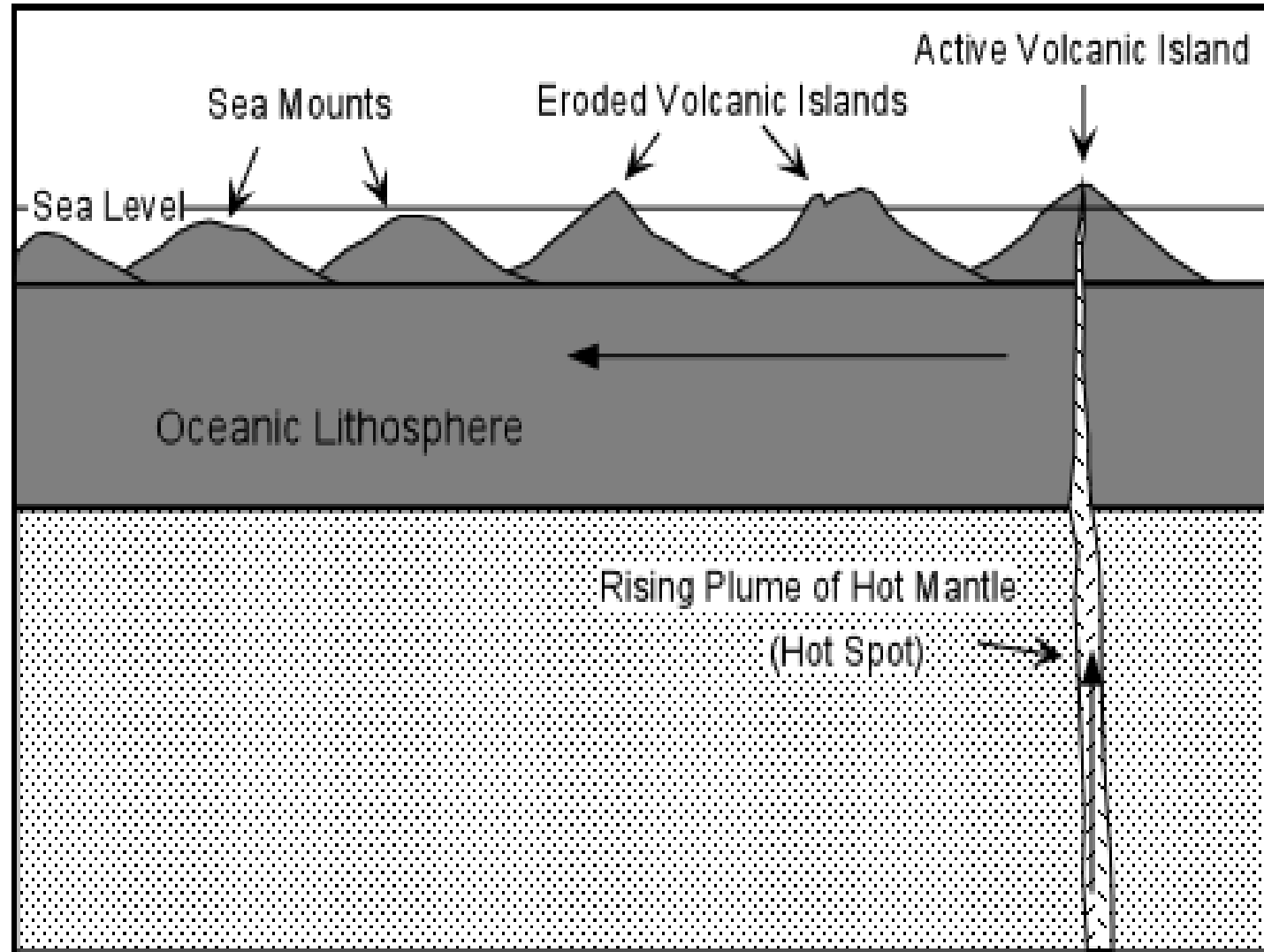


What causes volcanoes to form?

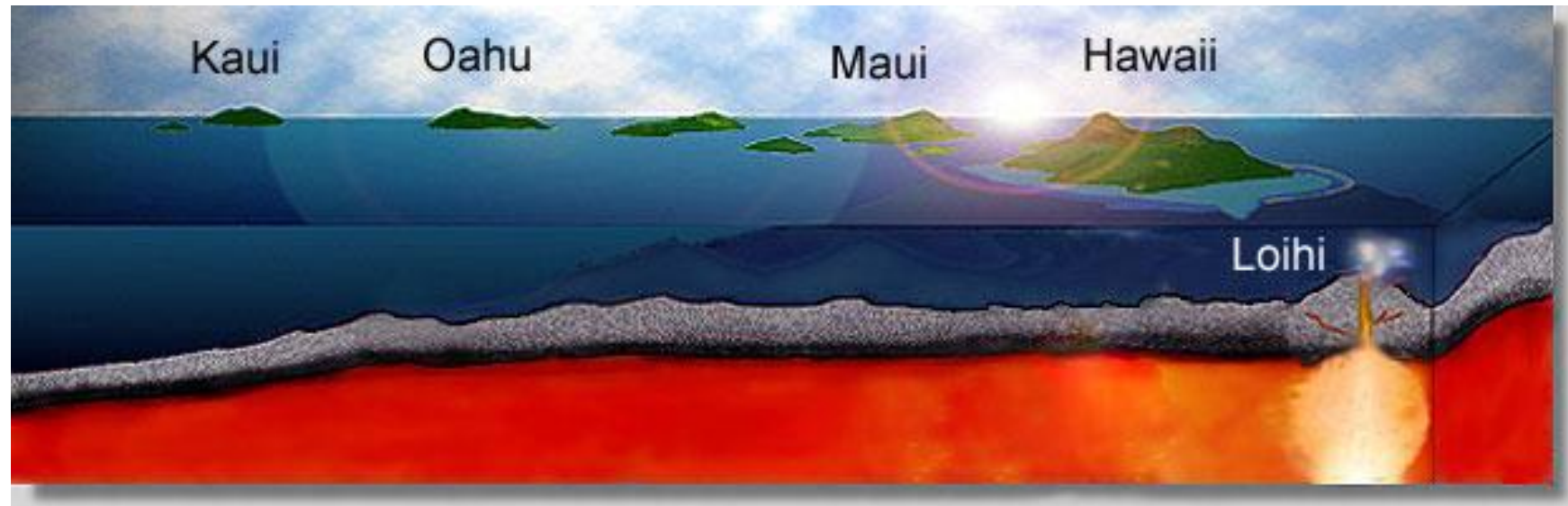
A **hot spot** is an area where magma from deep within the mantle melts through the crust like a blow torch.

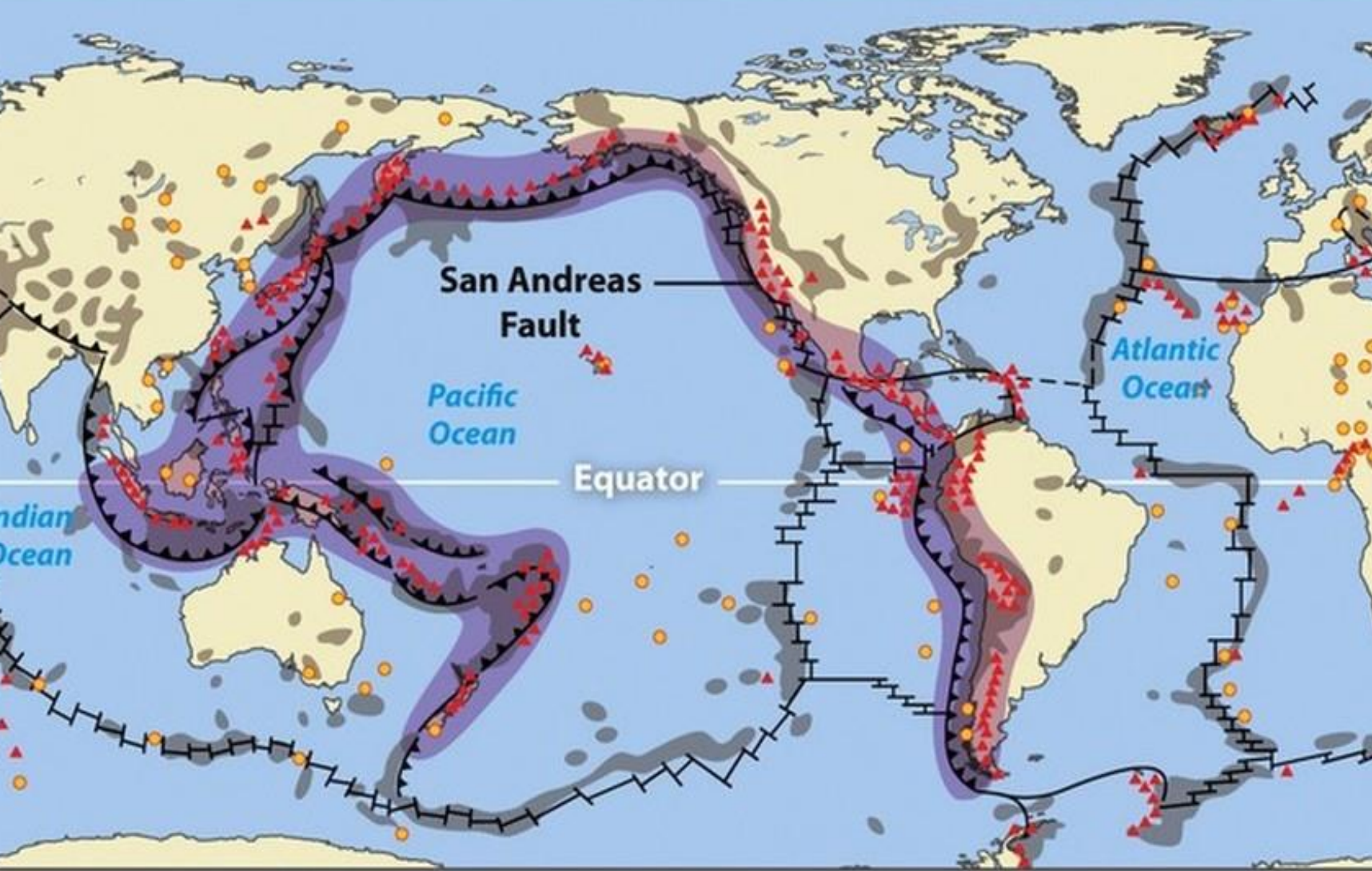


The older islands were once located above the stationary hot spot but were carried away as the Pacific Plate drifted to the northwest.

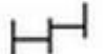









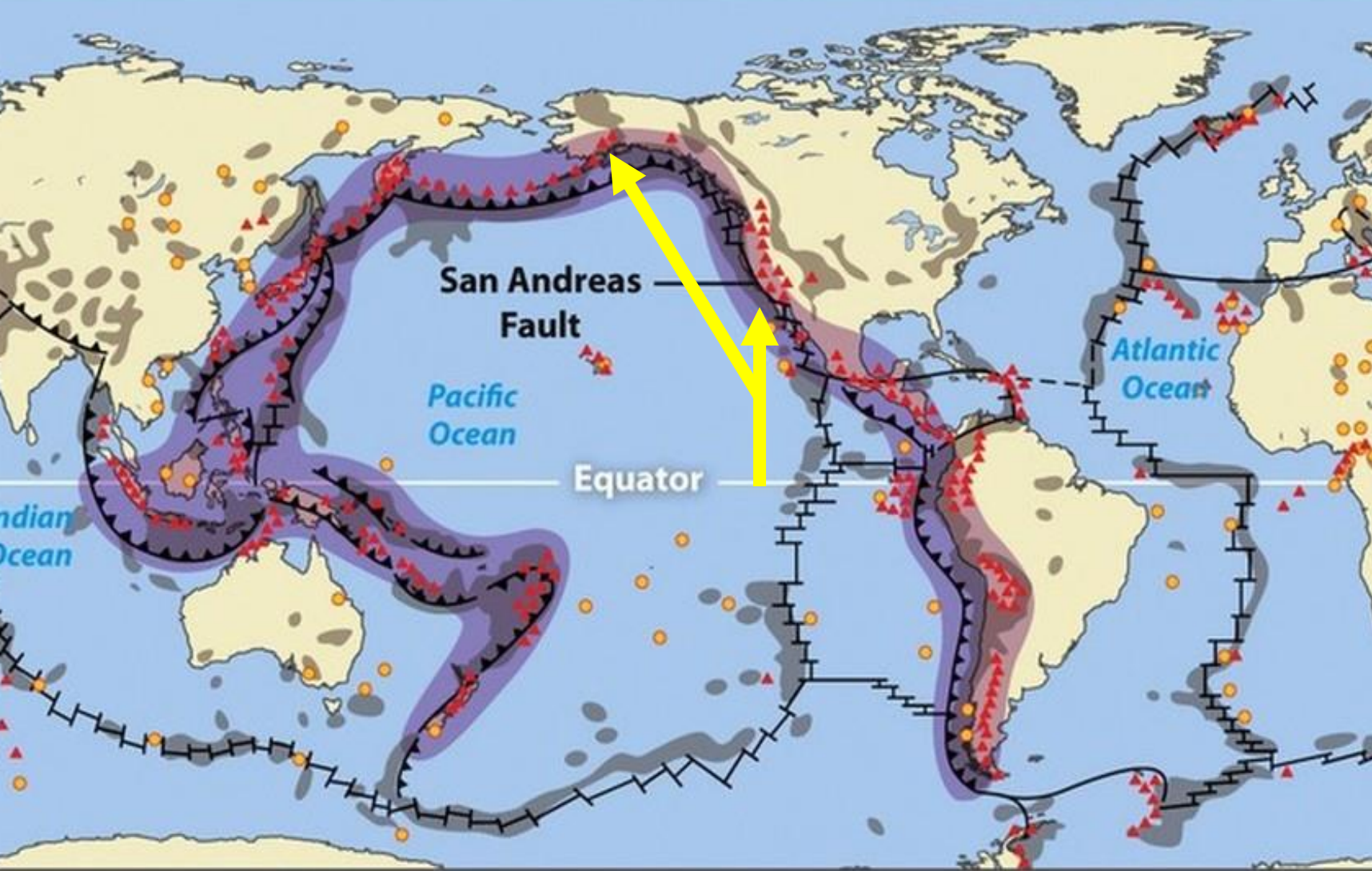
A fixed hot spot
created the
Hawaiian
Islands.

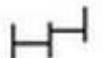











Using the map, where can you find volcanoes in the United States?

- | | |
|---|---|
|  Spreading zone |  Volcanoes |
|  Subduction zone |  Hot spots (present locations) |
|  Collision zone |  "Ring of Fire" |
|  Other plate boundaries |  Earthquake zone |



- | | | | |
|--|-------------------------------|---|--------------------------------------|
|  | Spreading zone |  | Volcanoes |
|  | Subduction zone |  | Hot spots (present locations) |
|  | Collision zone |  | "Ring of Fire" |
|  | Other plate boundaries |  | Earthquake zone |

In the United States, volcanoes are found on the west coast along the San Andreas Fault. Volcanoes are also present in Alaska along the Ring of Fire.

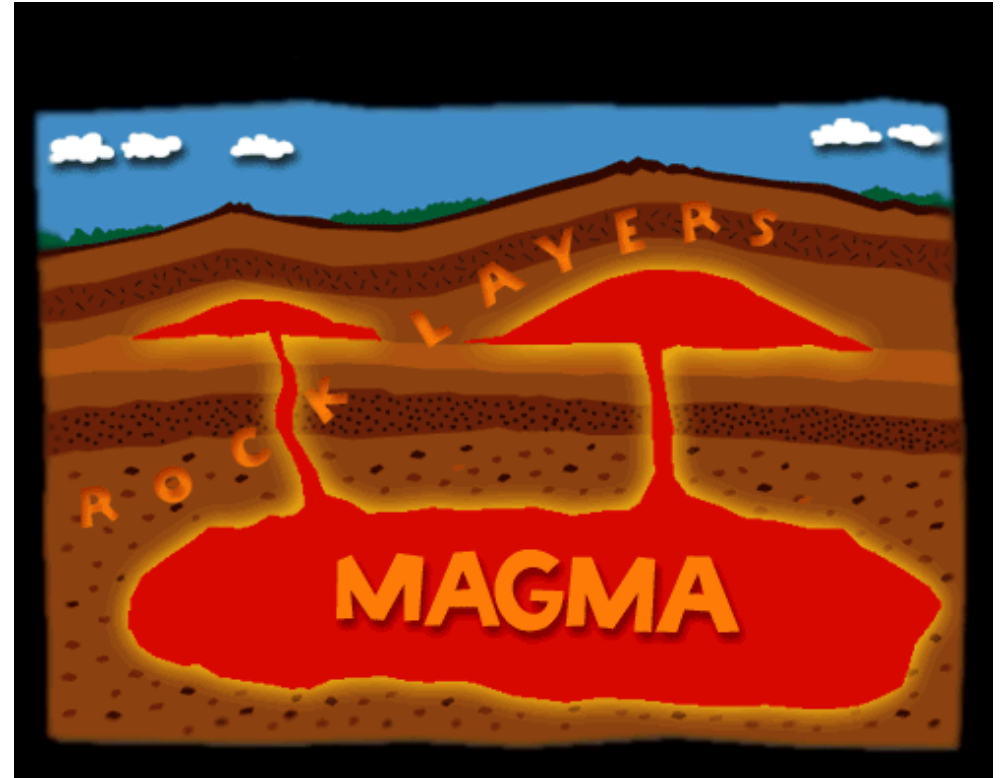
What is magma?

Molten mixture of rock-forming substances, gases, and water vapor in the mantle



Magma is still in the Earth

What is a batholith?



Mass of rock formed when a large body of magma cools inside the crust

What is a Dike?

Magma that forces itself across rock layers and then hardens vertically



What is a Sill?



Magma
squeezes
between layers
of rock
horizontally

What is lava flow?

The area covered by lava as it pours out of a vent (top of volcano)



Lava has made a river flow toward the ocean. When it cools it will become rock.



Dragon's teeth (in Maui) is a unique lava flow that was influenced by high waves as the ancient lava flow hit the ocean.



2 Main Types of Lava

Pahoehoe

- Fast-moving, hot lava
- Looks like solid mass of wrinkles, billows, and ropelike coils.

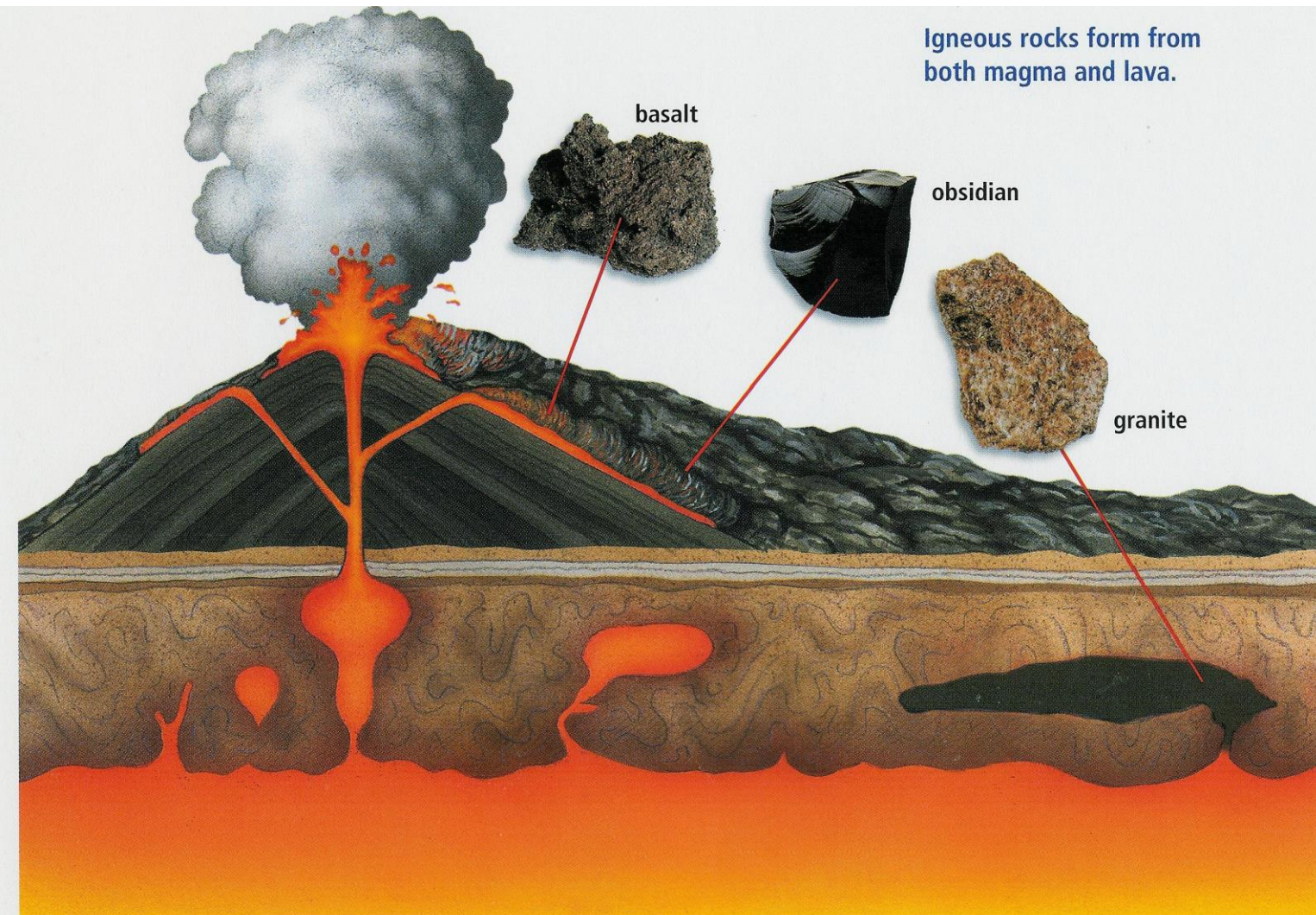


Aa

- Lava that is cooler and slower-moving, not smooth

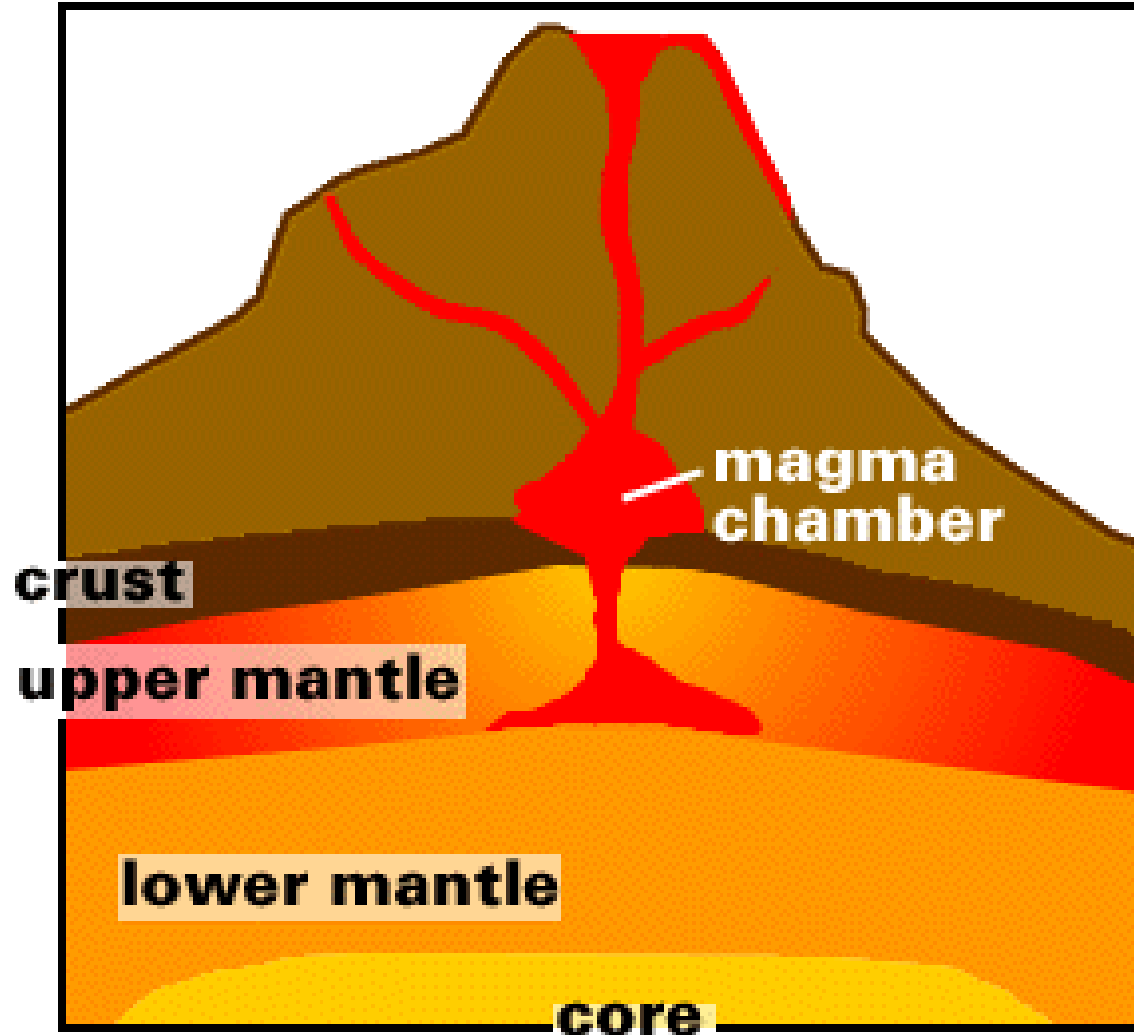


When magma or lava cools, they become igneous rock. Basalt, obsidian, granite, and pumice are common igneous rocks.



Pumice is a light-weight igneous rock formed when lava encounters water.

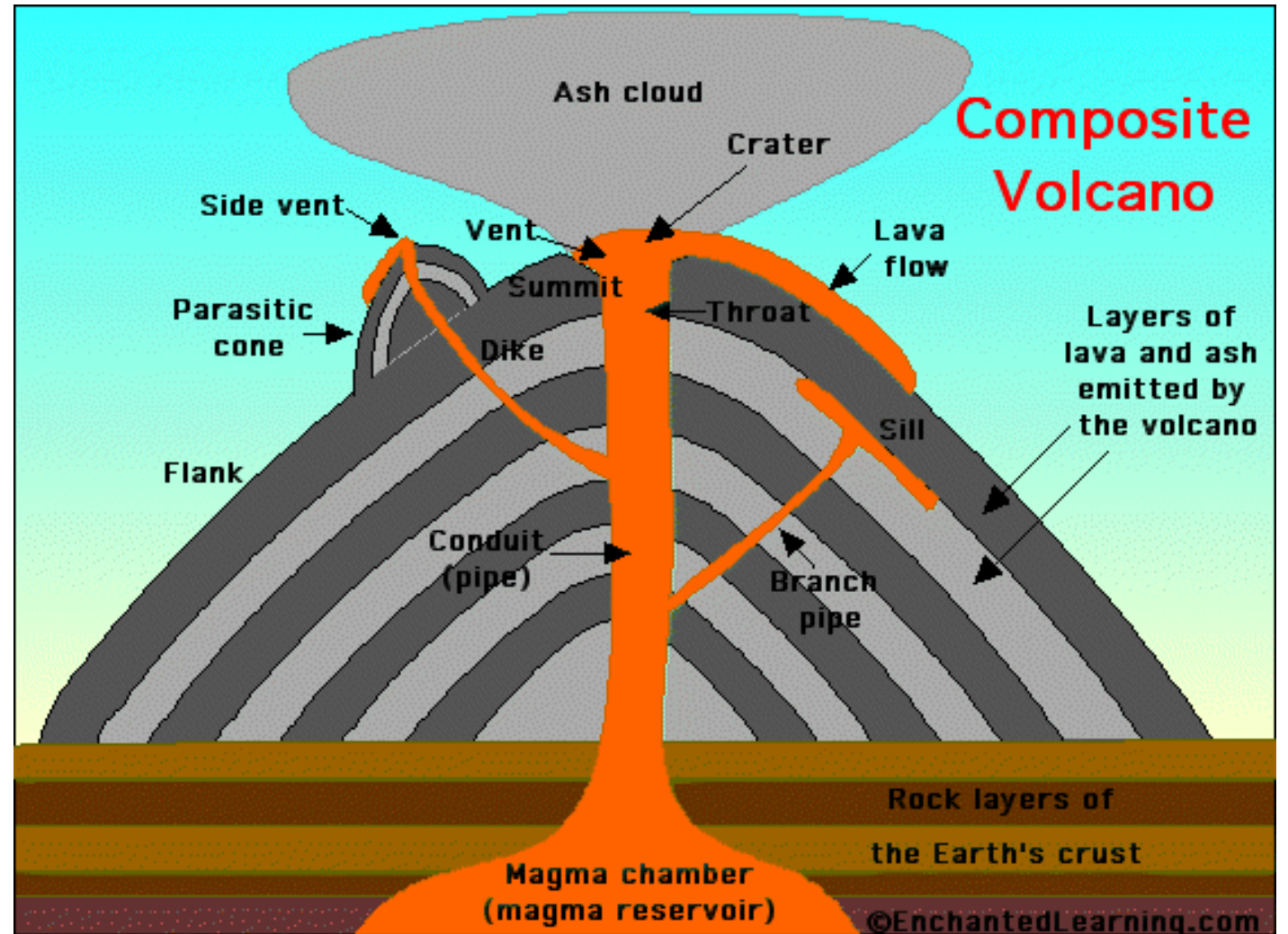
What is the Magma Chamber?



Where magma
collects in a
pocket

What is the Pipe?

Long tube in the ground that connects the magma chamber to the surface.



What is the Vent?



Besides the main vent at the top of the volcano, there can be a side vent too.

Molten rock and gas leave the volcano through an opening

What is the Crater?

Bowl-shaped area that may form at the top of a volcano around the volcano's central vent.





Small lava fountain erupts from a new vent on the flank of a cinder cone on Kilauea Volcano, Hawaii.

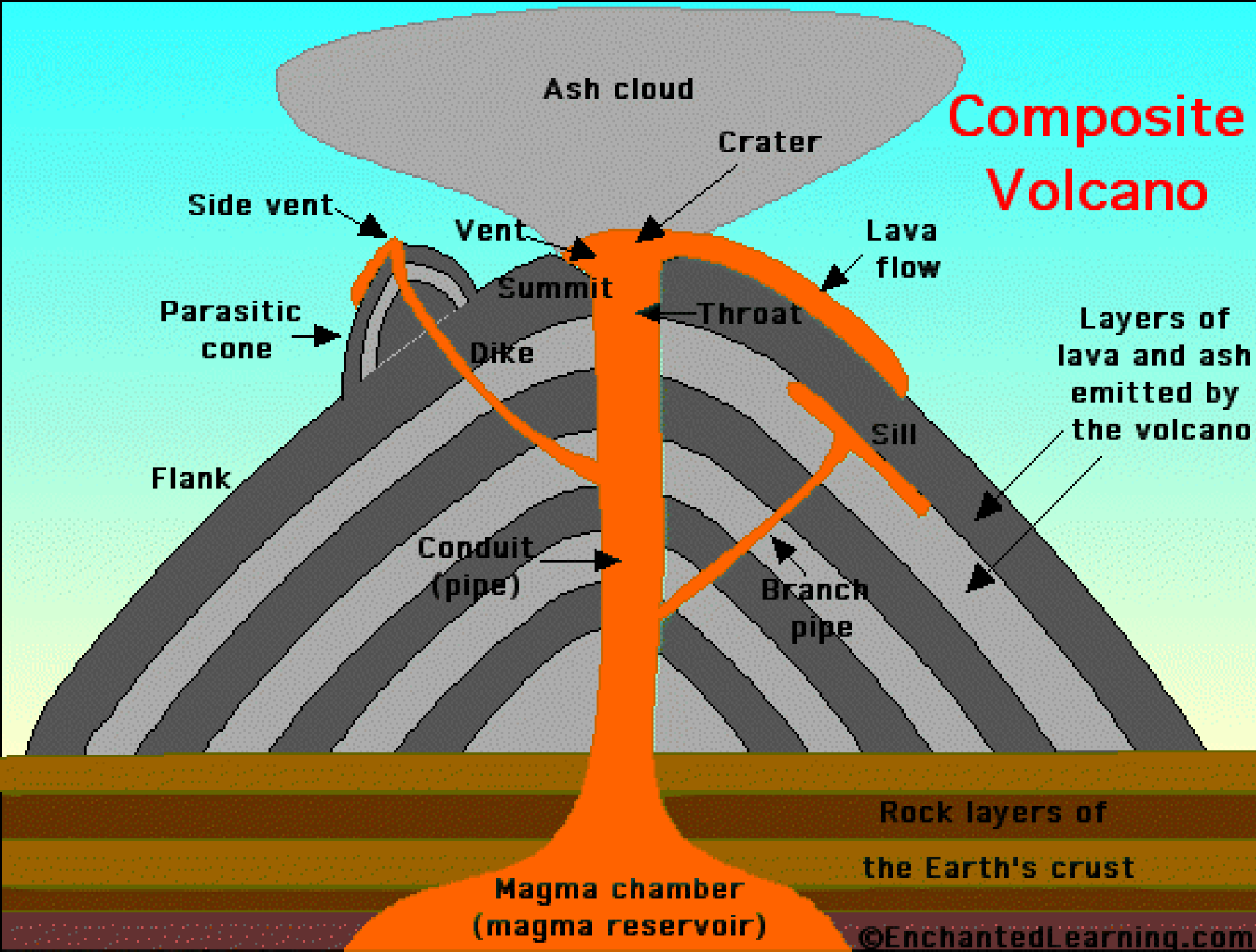
What is an ash cloud?

The cloud of ash that forms in the air after some volcanic eruptions



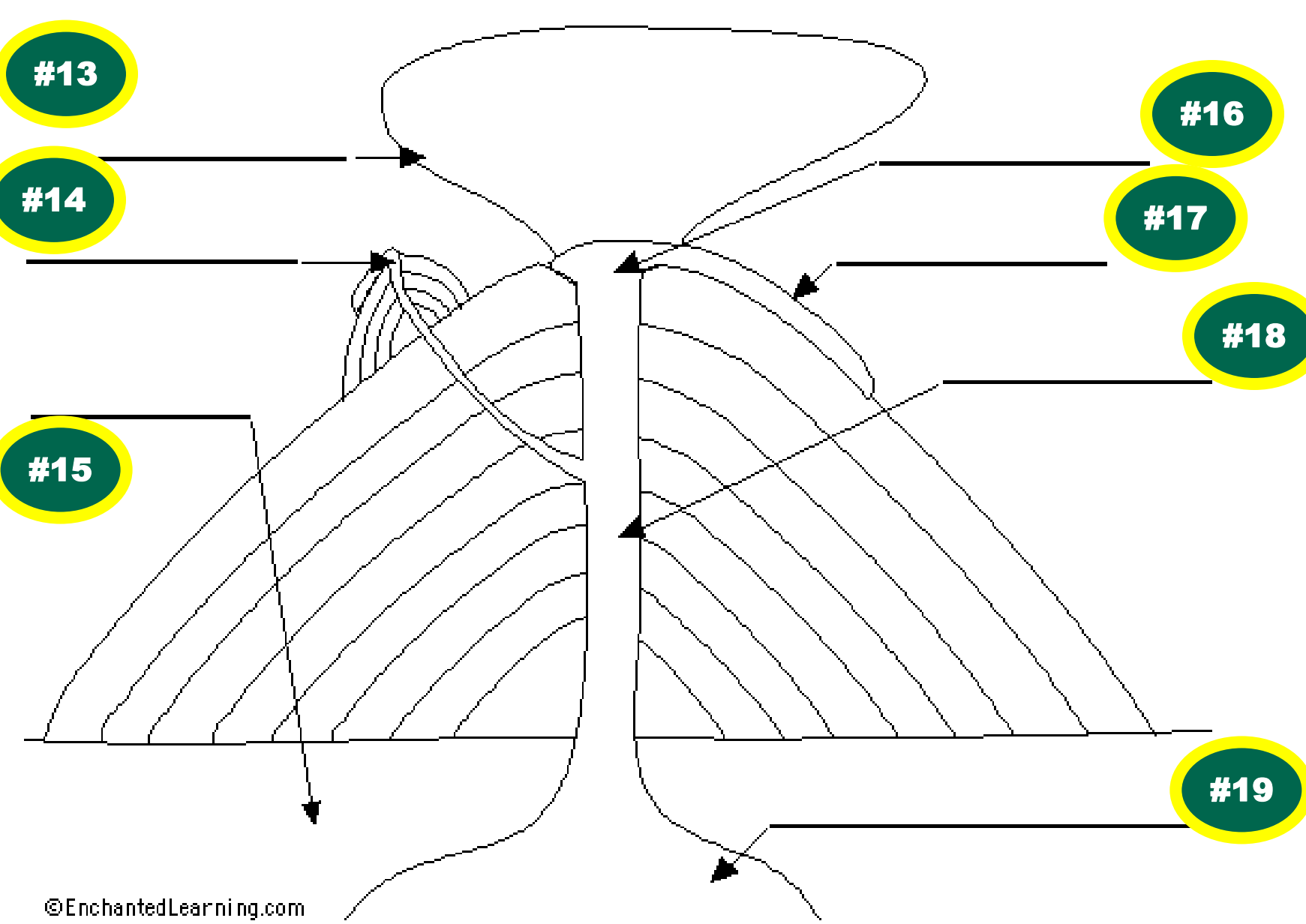
Composite Volcano

Look at the volcano diagram. Can you find:



- Vent
- Side Vent
- Magma Chamber
- Pipe
- Crust
- Ash cloud
- Lava

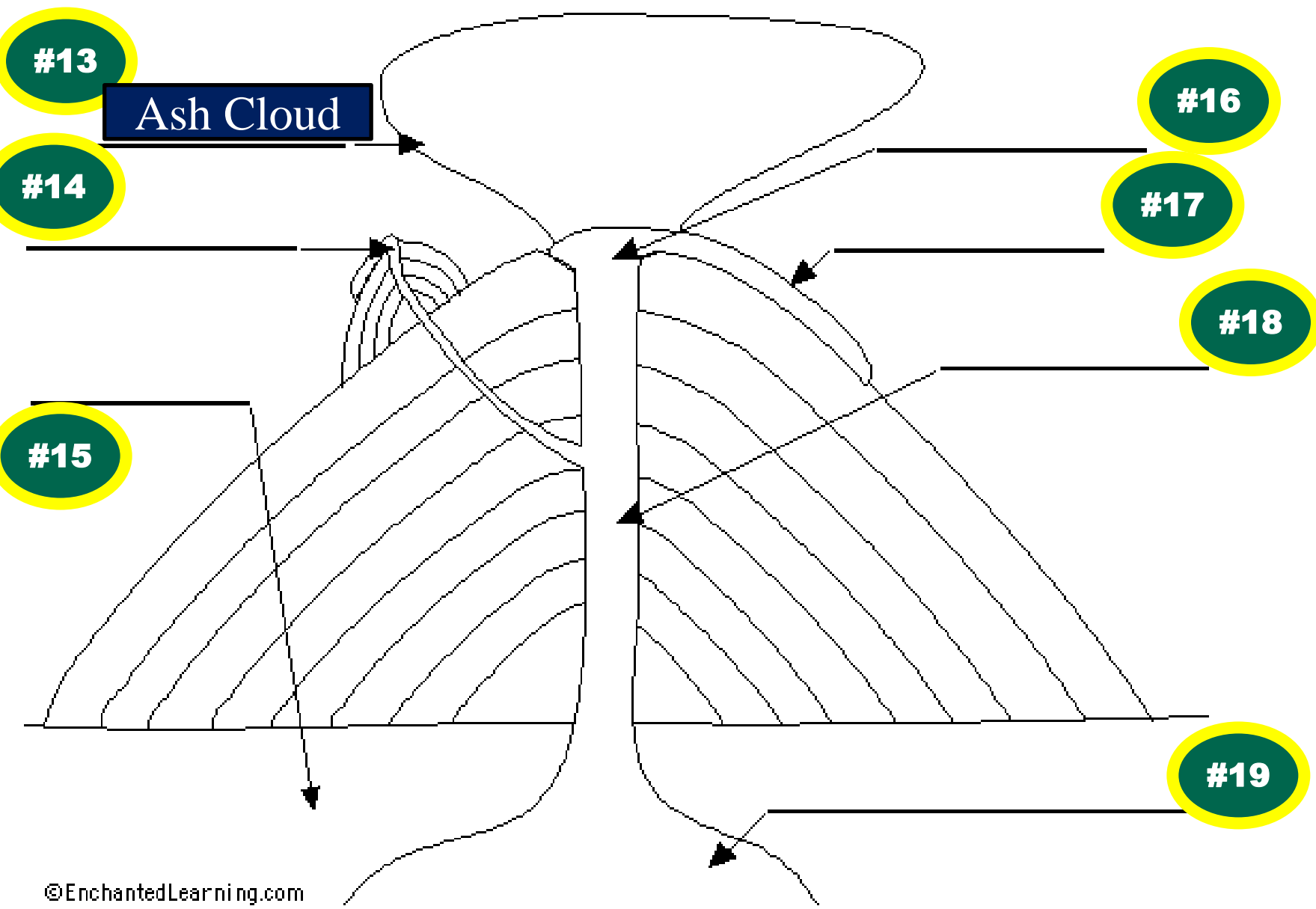
Label the volcano



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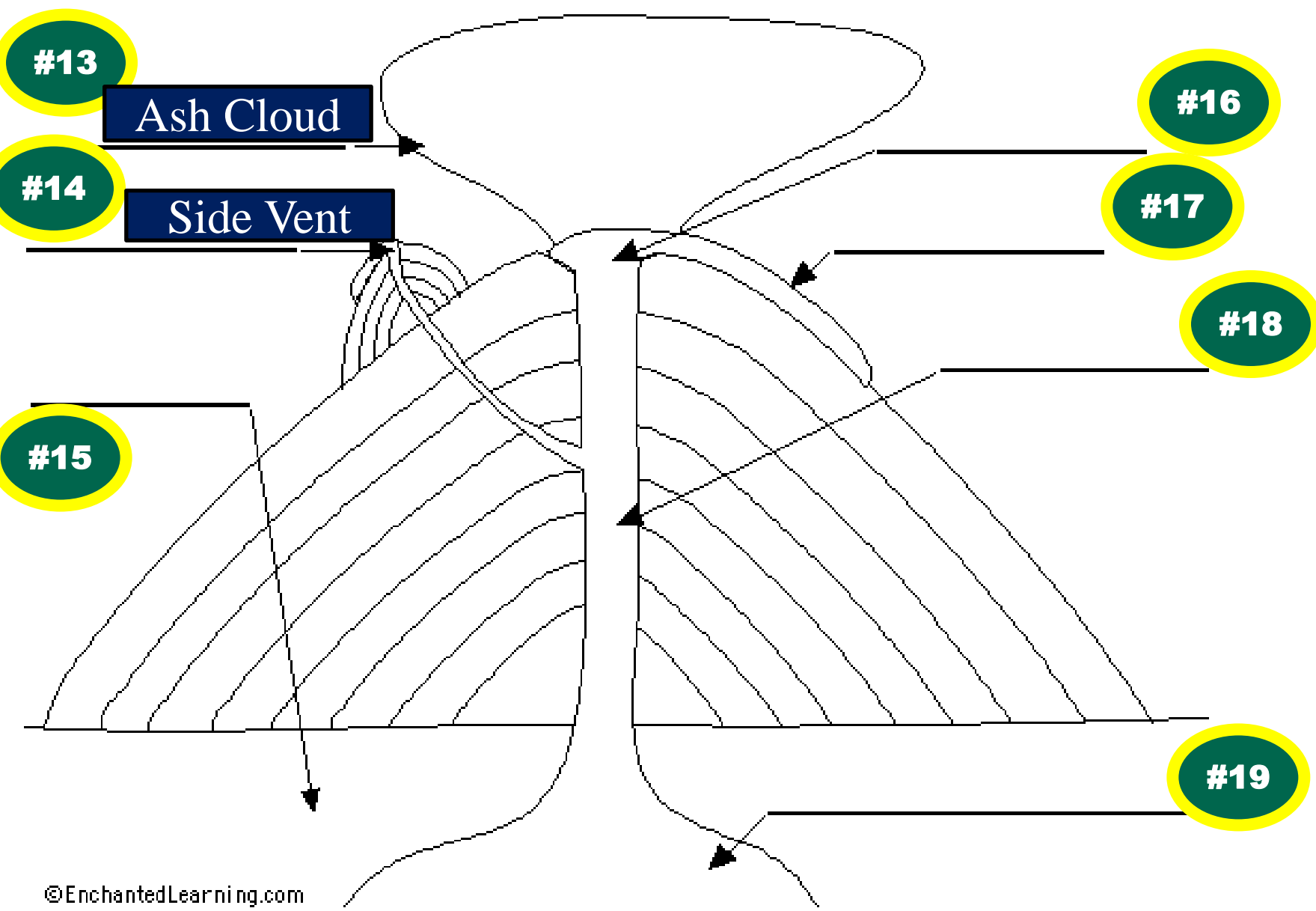
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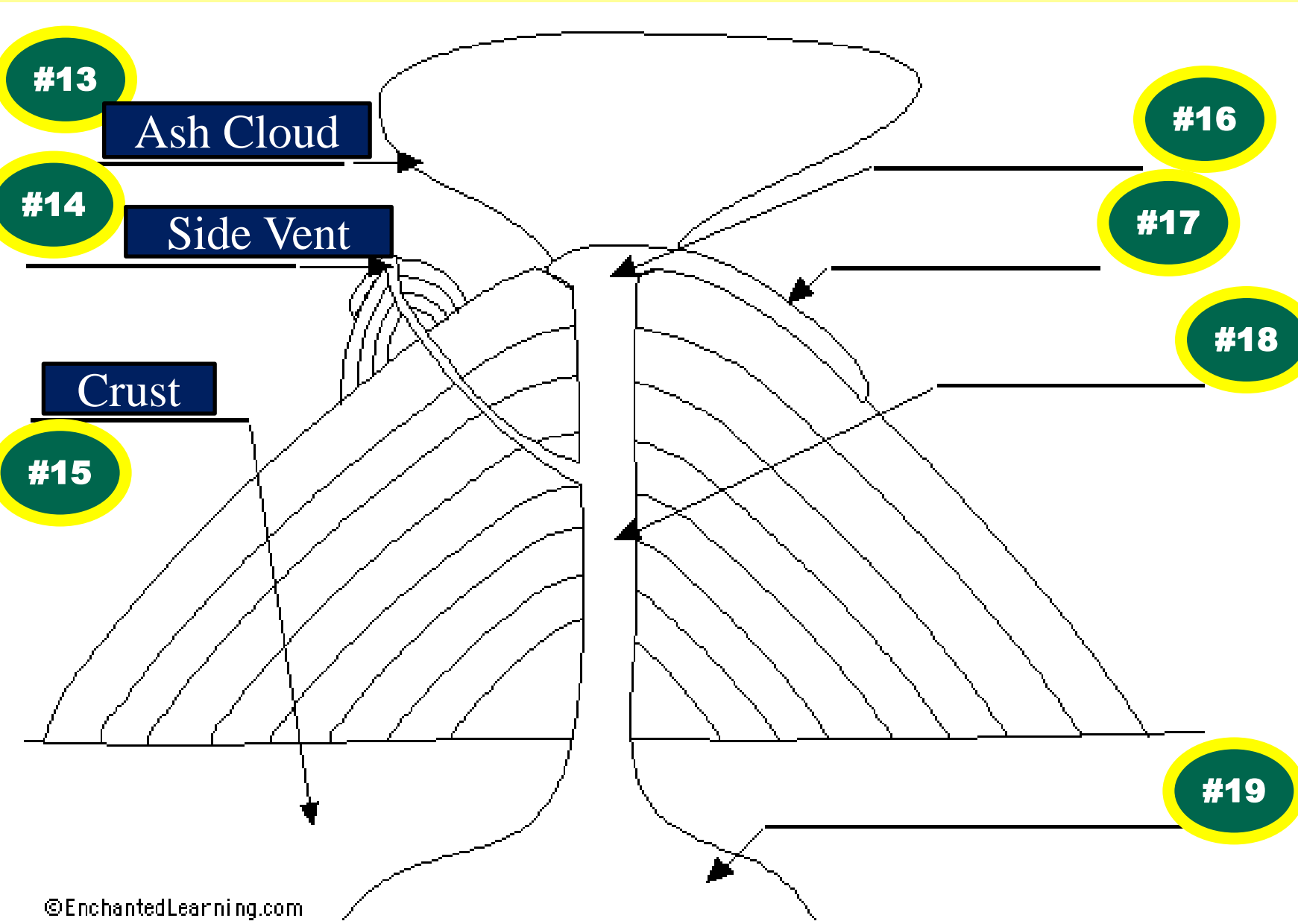
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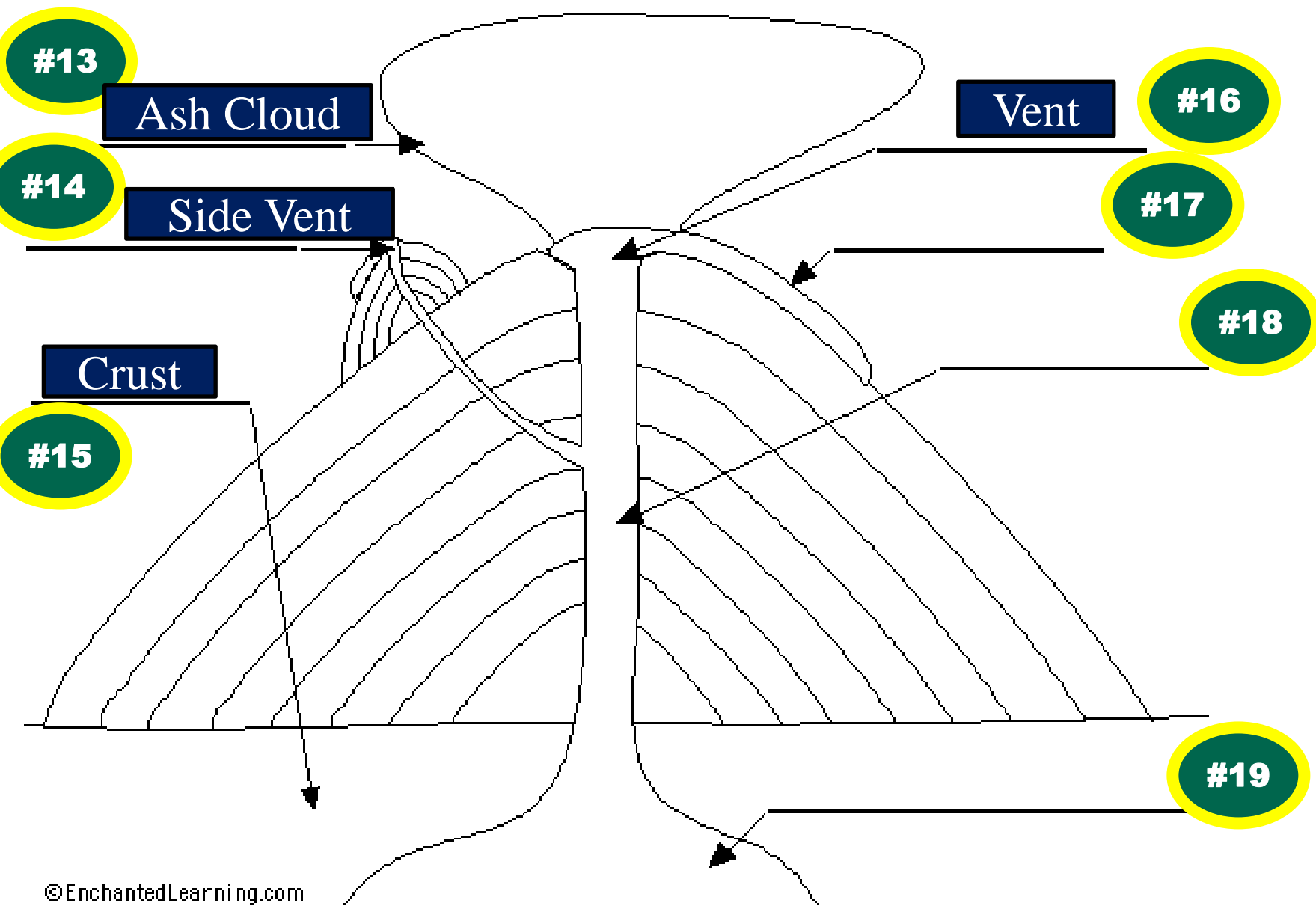
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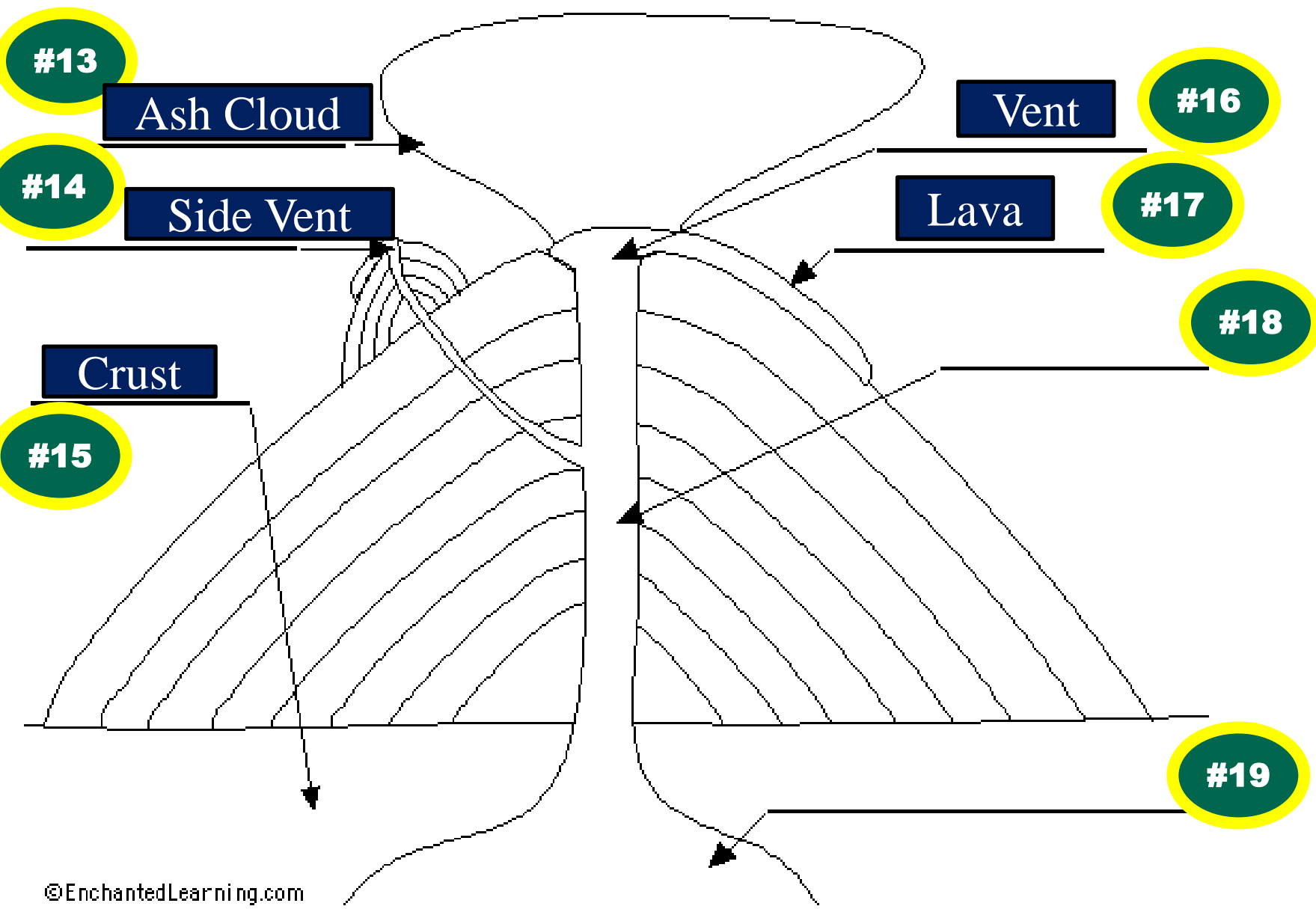
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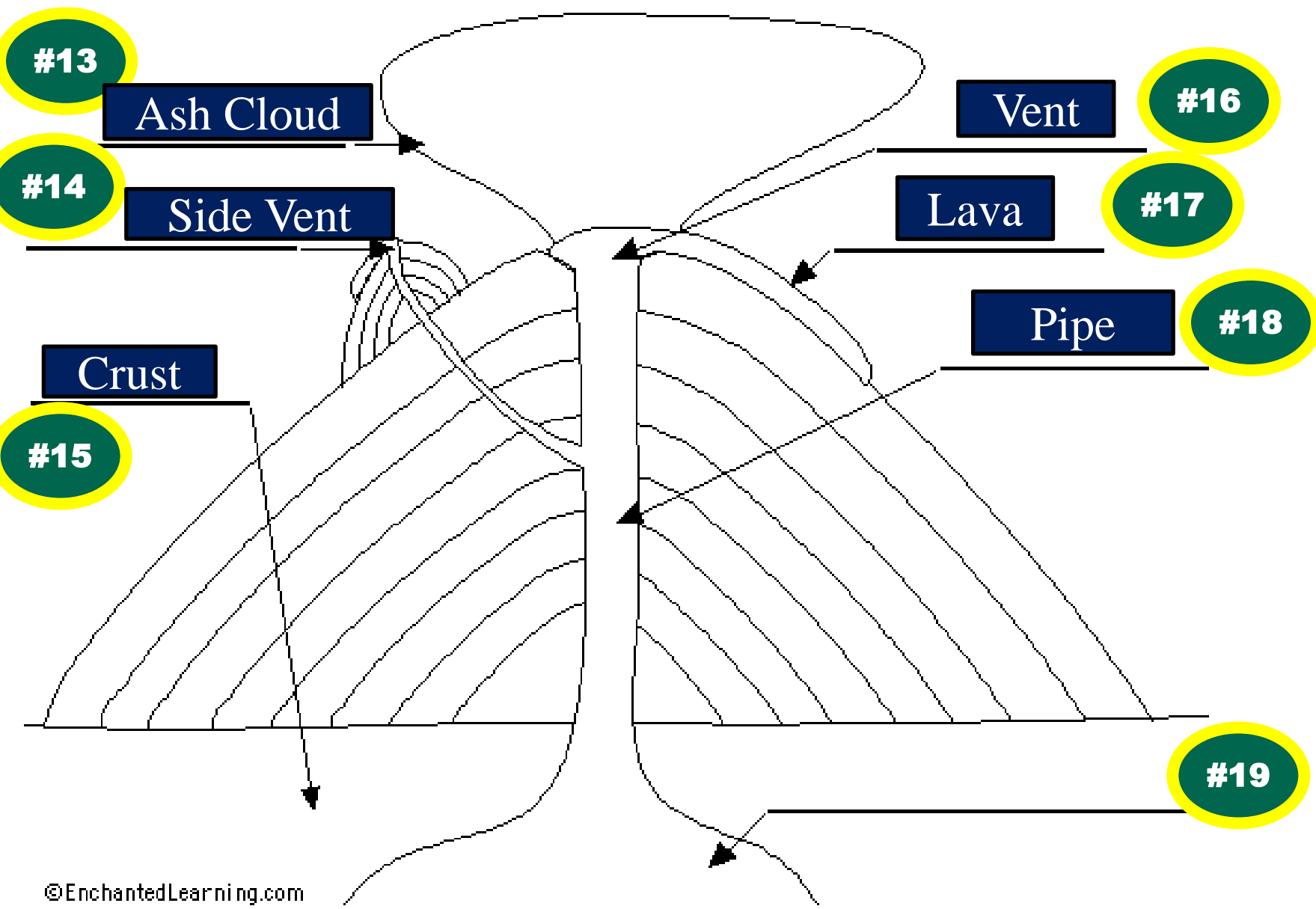
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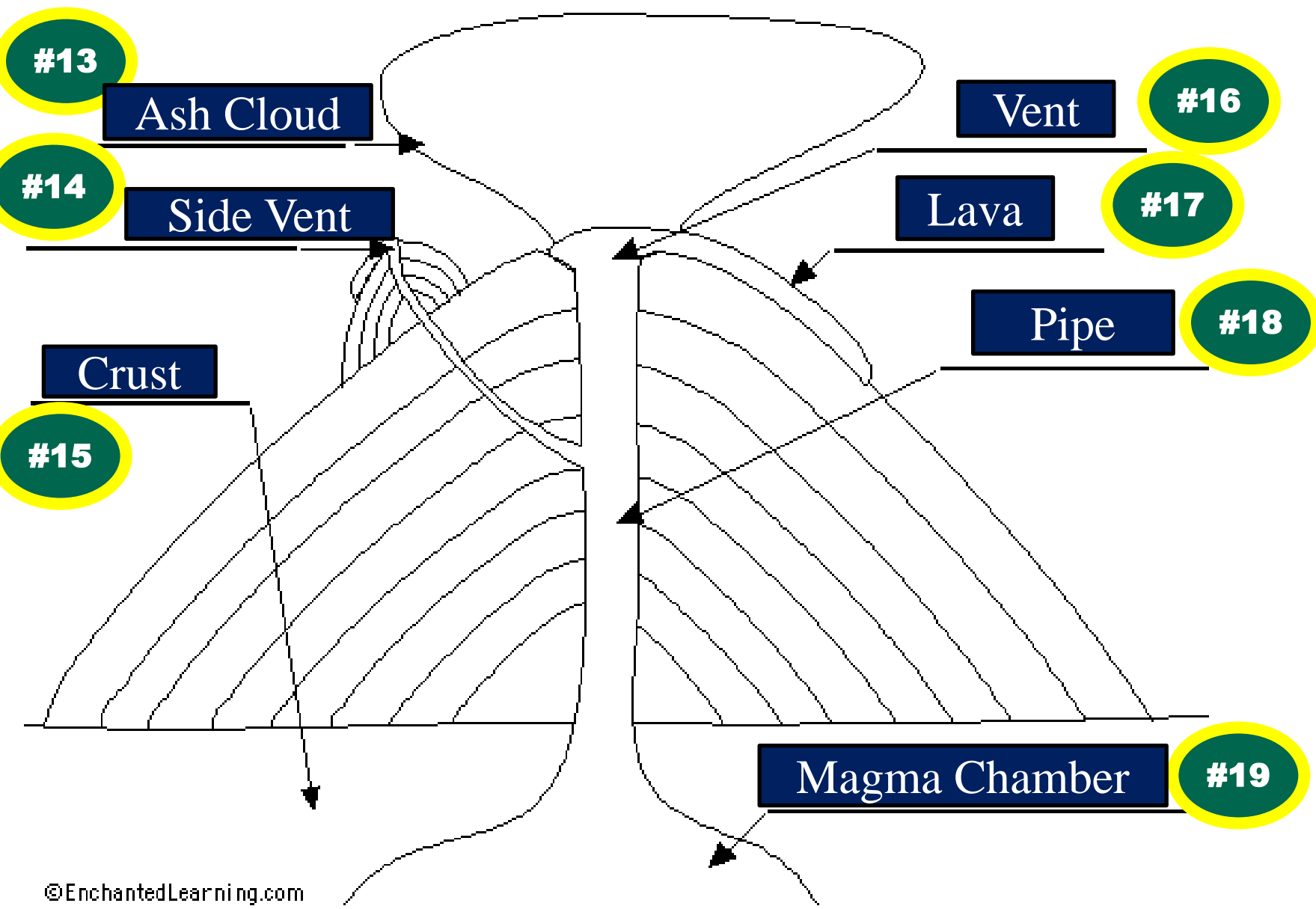
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Library for your
images and
diagrams!



Put on the whole
armor of God,
that you may be
able to stand
against the
schemes of the
devil.

Ephesians 6:11