

# VOLCANOES

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MS TOAL EAMS SCIENCE 2019



# VOLCANO

- **Volcano** – is a weak spot in the crust where magma comes to the surface
- **Magma** – molten mixture of rock, gases, and water
- **Lava** – when magma reaches the surface
- Mammoth Mountains (California), Mount Rainier (Washington), Krakatoa (Indonesia), Mt Pélee (St Pierre), Mt St Helens (Washington), Mt Pinatubo (Phillipines), Mt Etna (Italy), Vesuvius (Pompeii)



# Volcanoes and Plate Boundaries

- **Ring of Fire** – formed by the many volcanoes along the boundaries of Earth's plates (surrounds the Pacific Ocean)
- **Hot Spot** – is an area where material from deep within the mantle rises. A volcano forms above a hotspot when magma erupts through the crust and reaches the surface.





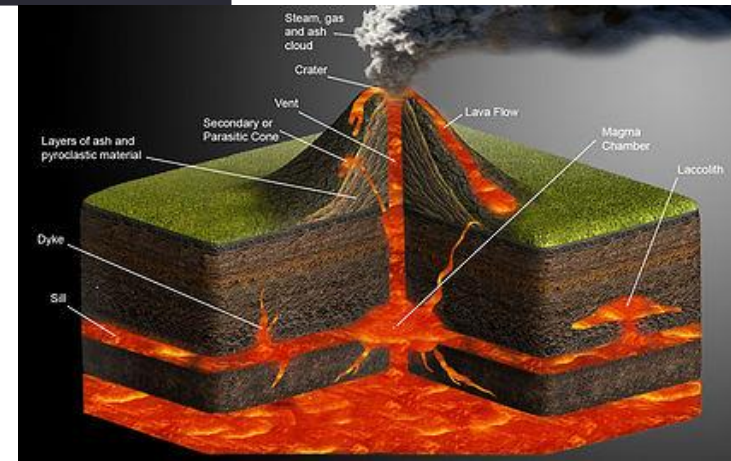
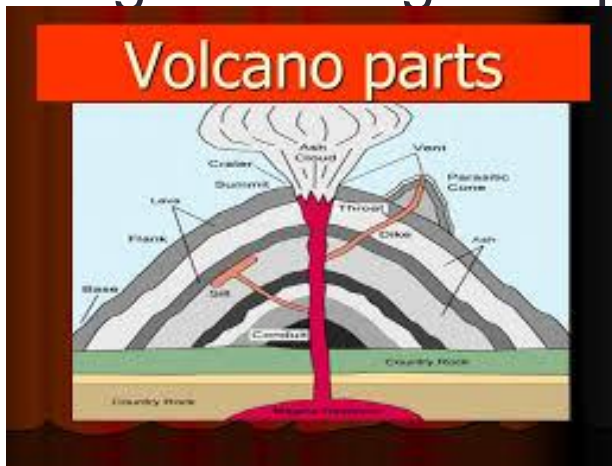
# Volcanic Eruptions

- Hawaii – myths of Pele (the fire goddess – lives in the depth of Hawaiian volcanoes) Angry = eruption. \*Pele's hair = certain rock type



# Inside of a Volcano

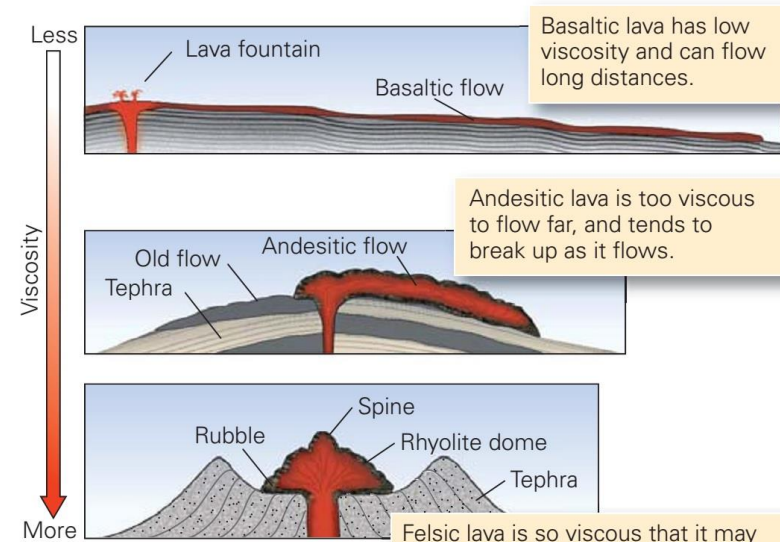
- **Magma Chamber** – a pocket of magma
- Magma moves upward through a **PIPE**, which is a long tube in the ground that connects **the magma to the surface.**
- **Vent** – the **opening** of a volcano
- **Lava flow** – when it flows out of vent
- **Crater** – **bowl shaped** area, forms at the **top** of a volcano
- volcano erupts, the force of **the expanding gas** pushes magma through the pipe until **it flows/explodes**



# Kinds of Volcanic Eruptions

- Depends on the amount of **SILICA** in the magma.
- **Quiet**: low in silica, gases bubble out gently, lava is runny and flows easily like in Hawaii (low viscosity)
- **2 types of quiet**; **Pahoehoe** (smooth) and **aa** (rough)
- **Explosive**: high level of Silica, gases are **trapped**, lava is **thick and sticky**, sticks to pipe/plugs volcano. Can explode into fragments.
- **Pyroclastic Flow** – type of explosive eruption that hurls mix of hot gases/ash/cinders/bombs

## 4 TYPES OF VOLCANOES

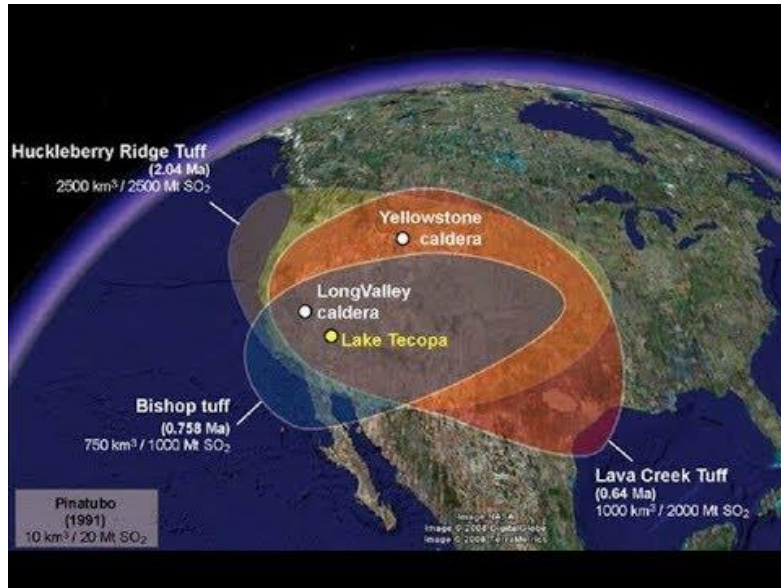






# Landforms

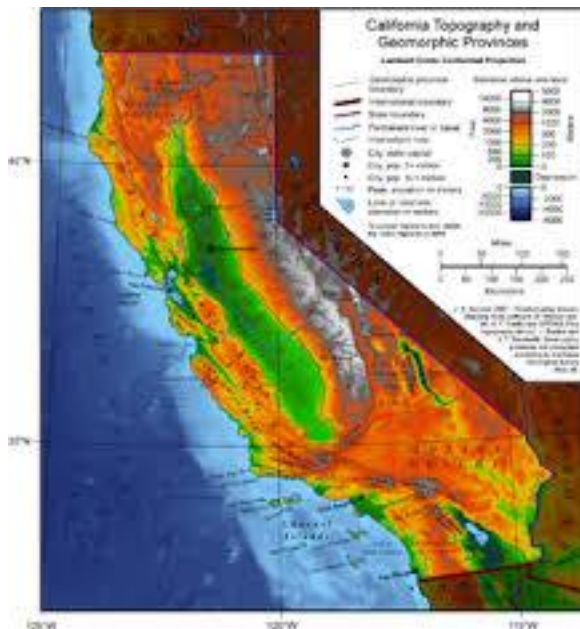
- Shield volcano, Cinder Cone, composite volcano
- **CALDERA** – huge hole left by collapse of a volcanic mountain.
- **Long valley** caldera in Calif (from 780,000 yrs ago)
- **Crater Lake** in Oregon (7700 yrs ago)
- **Batholith** – large body of magma cools inside the crust.  
**Sierra Nevada** batholith





# California Geology

- Pacific and North American plates produced California's geologic features. We have all the geologic provinces.
- There are 11 provinces. Basic landscapes are Volcanoes, Faults, Mountain Ranges, and Basins.
- Unique features in California: we have a desert, mountains, volcanoes, valleys, plateaus, basin and range, coastal ranges,



# Pompeii

Vesuvius Aug 24, 79 AD.

Eyewitness Account: Pliny the younger/Pliny the Elder

