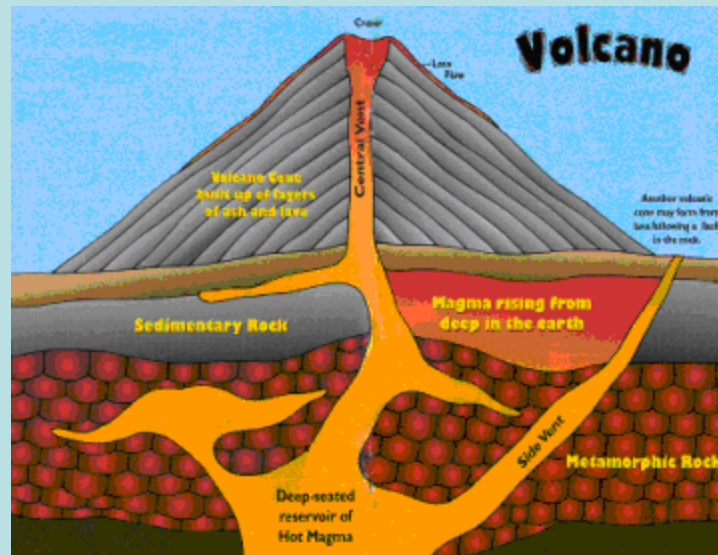




Volcanoes AND ITS TYPE

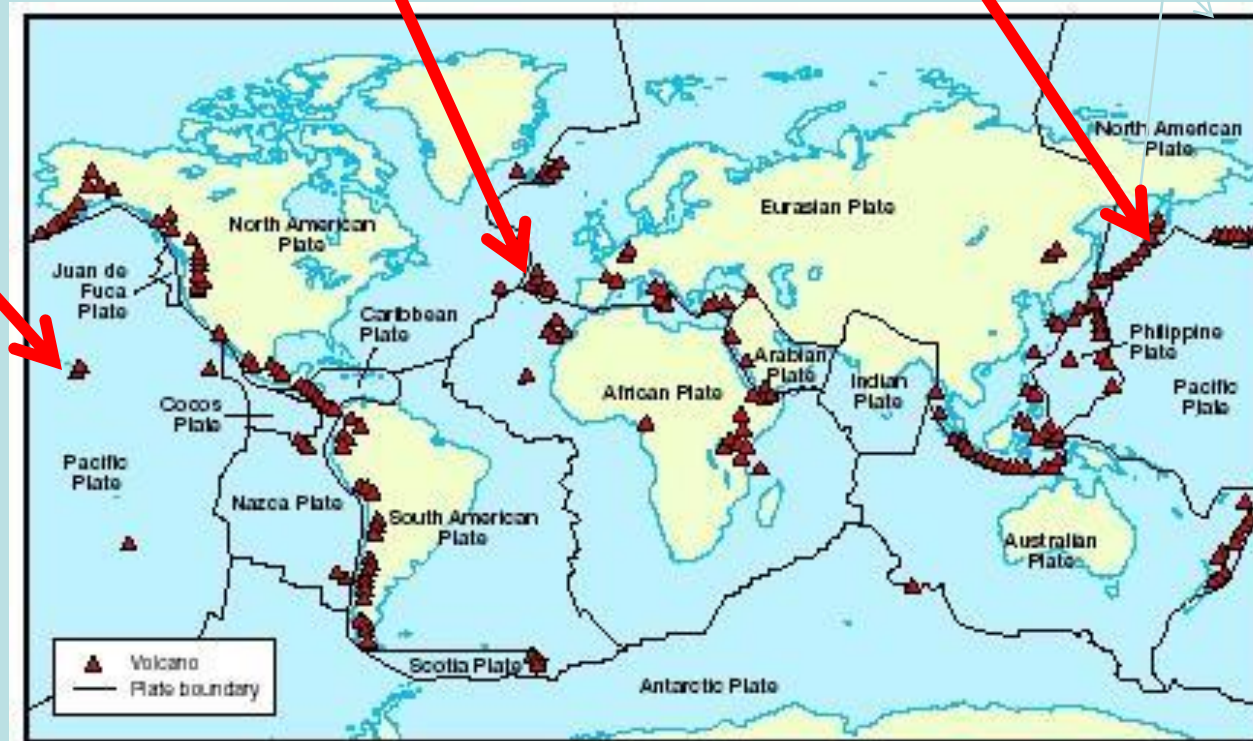
What is a volcano?

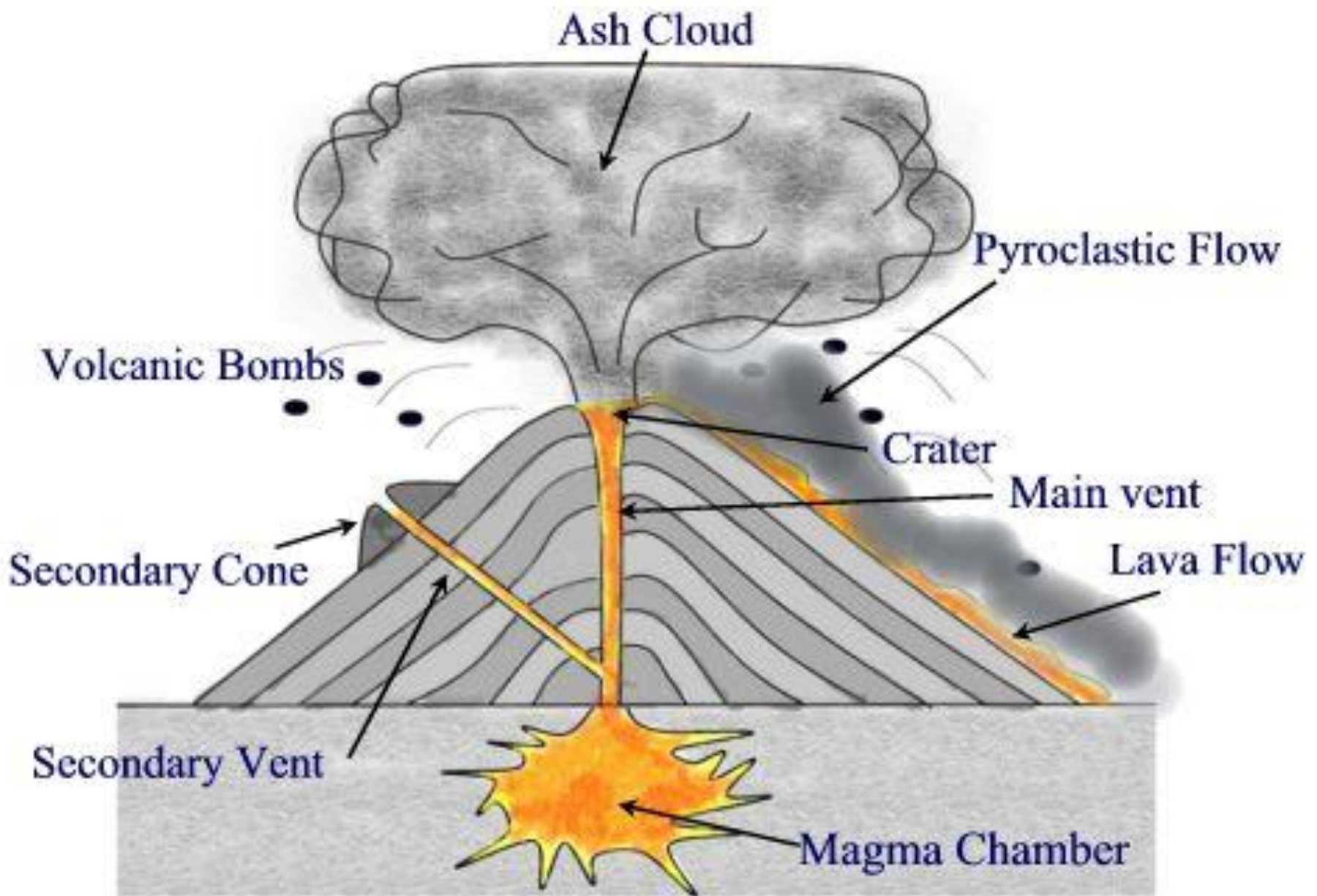
- *A point on the earth's crust where magma forces its way to the surface*
- *Ash and gases may also escape*



Where do they occur?

- On subduction zones
- On constructive plate boundaries
- On hot spots





Main Features of a Volcano

What types of volcanoes are there?

Acid volcanoes

- Highly explosive*
- Magma/lava is viscous (thick)*
- Found where oceanic crust is subducted under continental crust*

Basaltic volcanoes

- Less explosive**
- Magma/lava less viscous (runny)*
- Found at rift zones (constructive boundaries) and hotspots*

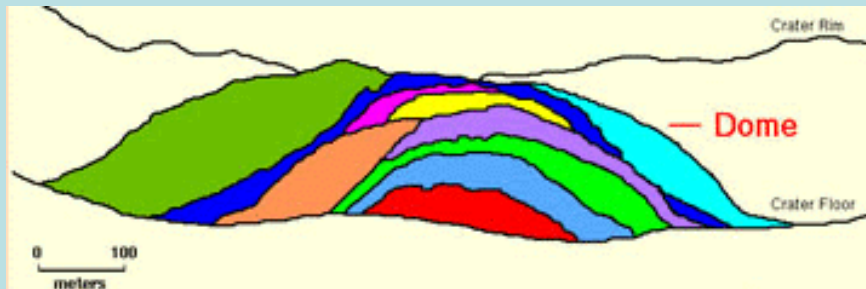
** Continental hotspots are basaltic but potentially highly explosive*



Acid (rhyolitic) volcanoes

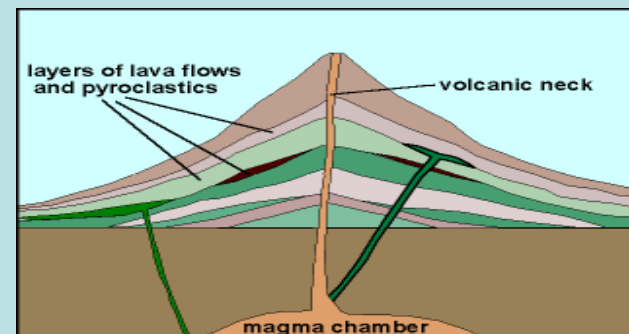
Lava domes

- Formed of layers of lava high in silica
- Lava is viscous and does not run very far
- Rounded form
- composed completely of lava



Stratovolcanoes

- Also called composite volcanoes
- Formed of layers of lava and ashes
- Lava is viscous
- Distinct cone shape



Example - lava dome

- Mount St Helens - Washington state, USA*



Example - stratovolcano

- *Mount Pinatubo, Luzon, Philippines*



Other famous stratovolcanoes



*Fuji,
dormant*



*Vesuvius,
active*



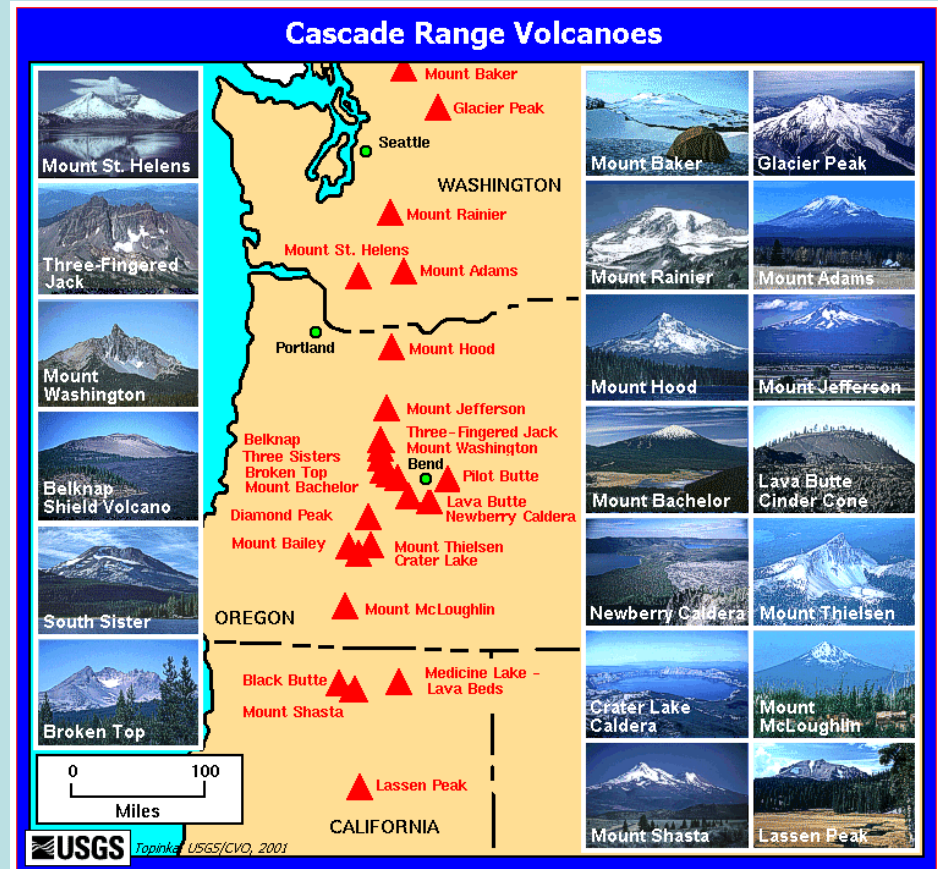
*Krakatoa,
active*



*Kilimanjaro,
dormant*

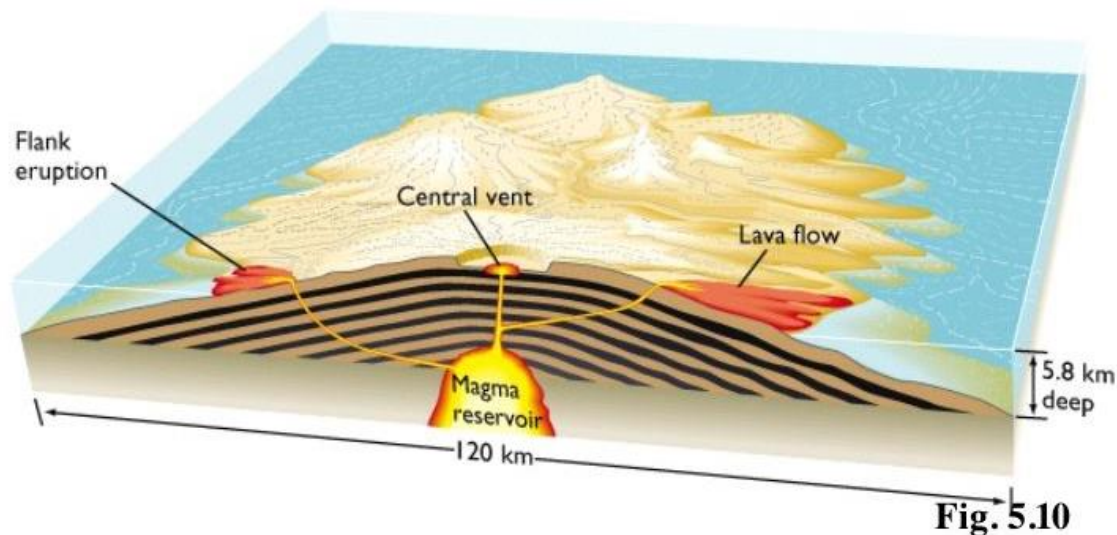
Location of stratovolcanoes

- *Along subduction zones*
- *Often found in volcanic arcs**
- *E.g. Cascade range, USA*



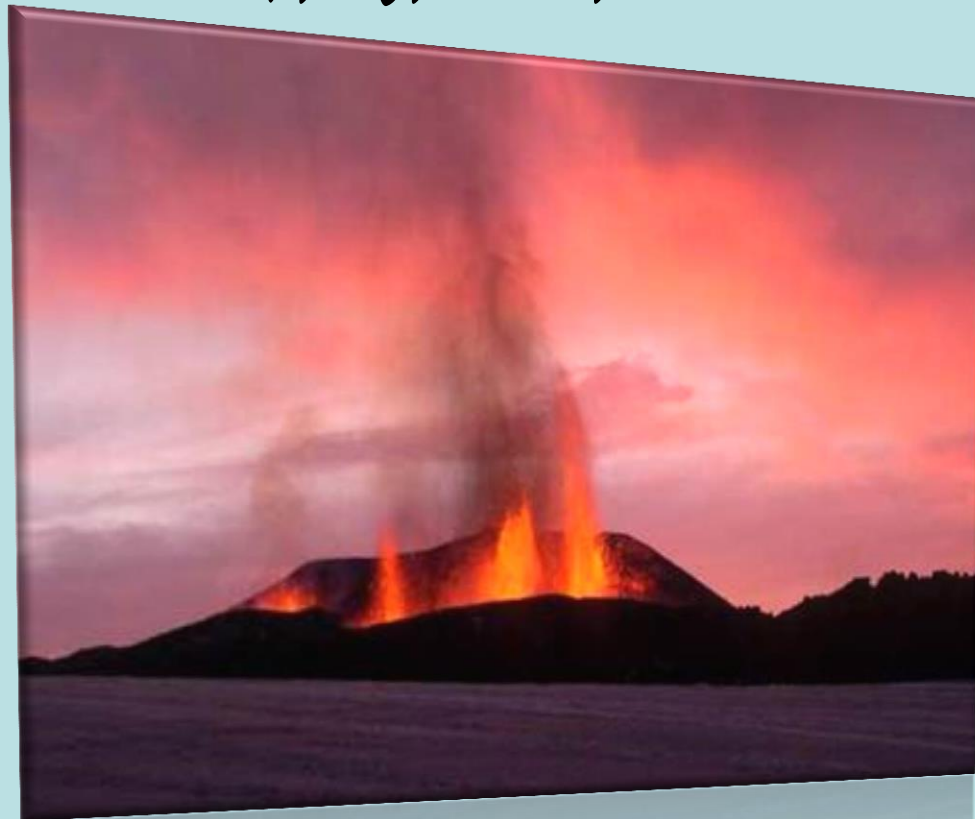
Basic (basaltic) volcanoes

- Also known as shield volcanoes
- Formed of widespread layers of lava low in silica — low viscosity, lava travels very far
- Low form spread over a great distance



Example - basic volcano

- *Eyjafjallajökull, Iceland*



Example 2

- *Kilauea, Hawaii*



Calderas

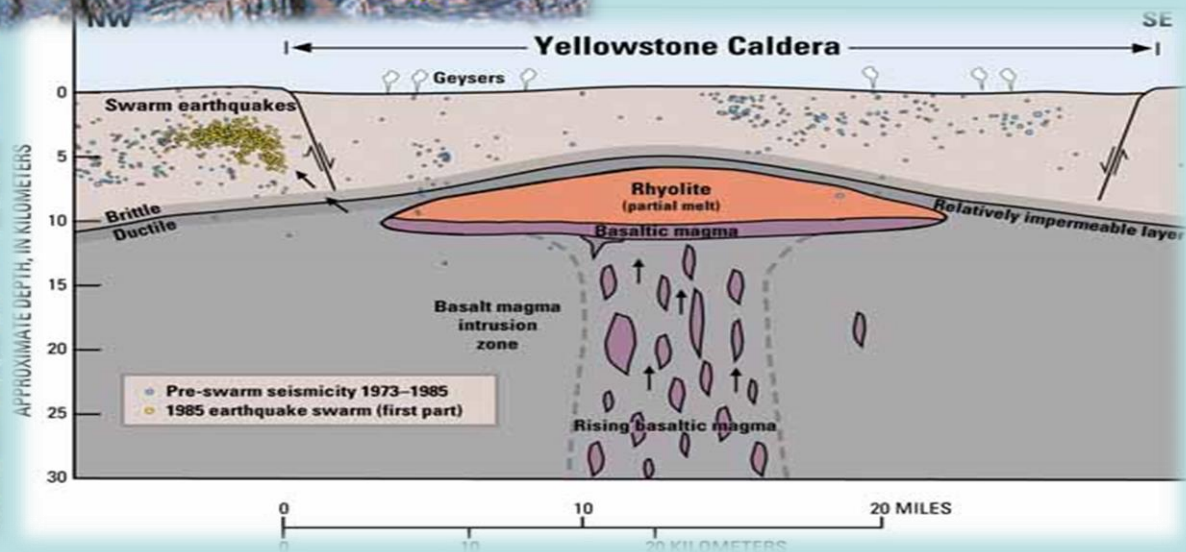
- *Collapsed volcanoes*
- *Magma chamber has emptied and the ground has sunk*
- *Often becomes a lake*
- *New volcanoes can form, or pressure can build from below, lifting the ground*
- *If acidic, this can cause a catastrophic eruption in the form of a "super-volcano"*

Caldera - Santorini

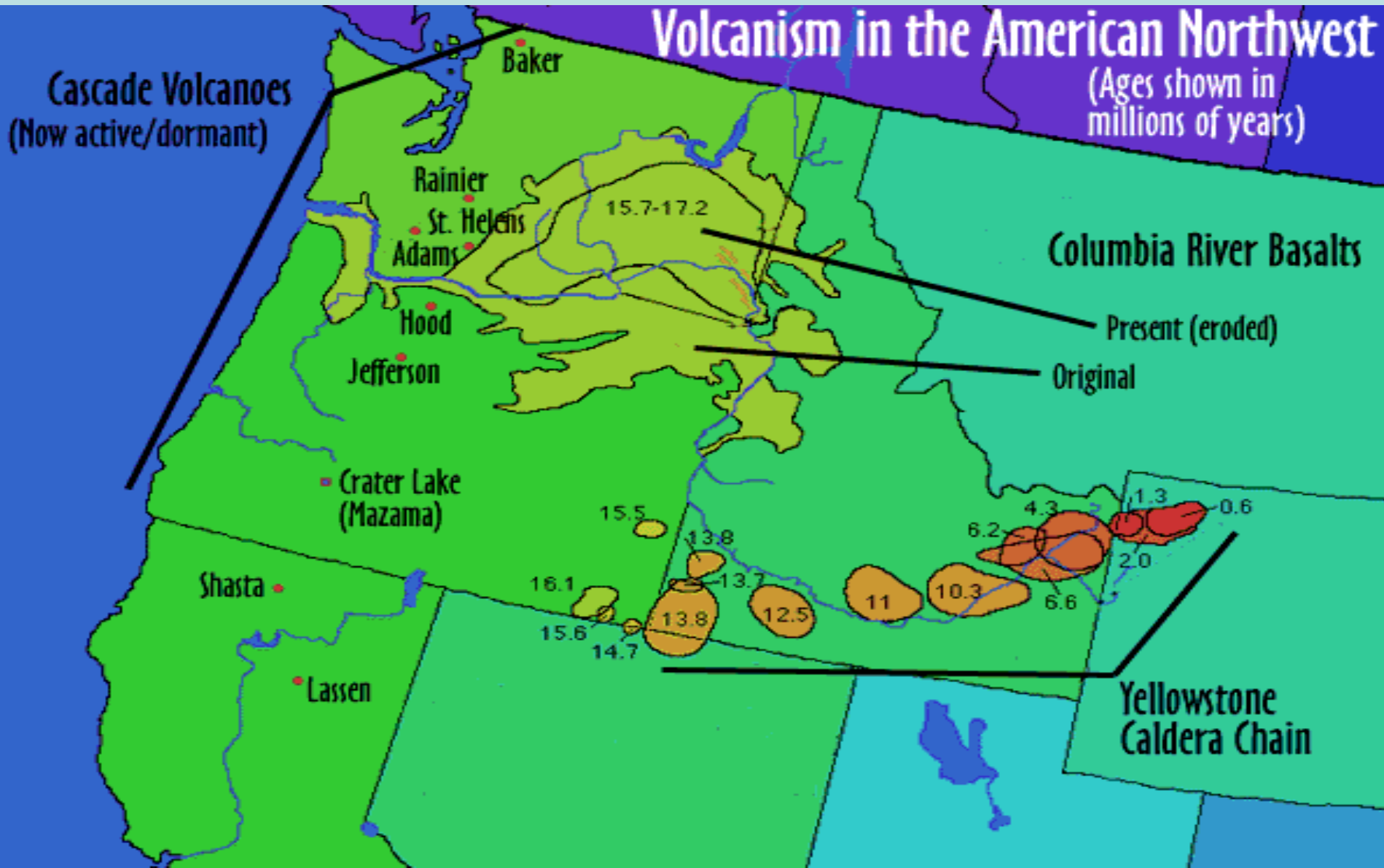


- *Destroyed the Minoan civilization due to tsunamis circa 1600BC*
- *May have given rise to the Atlantis myth*

Yellowstone national park

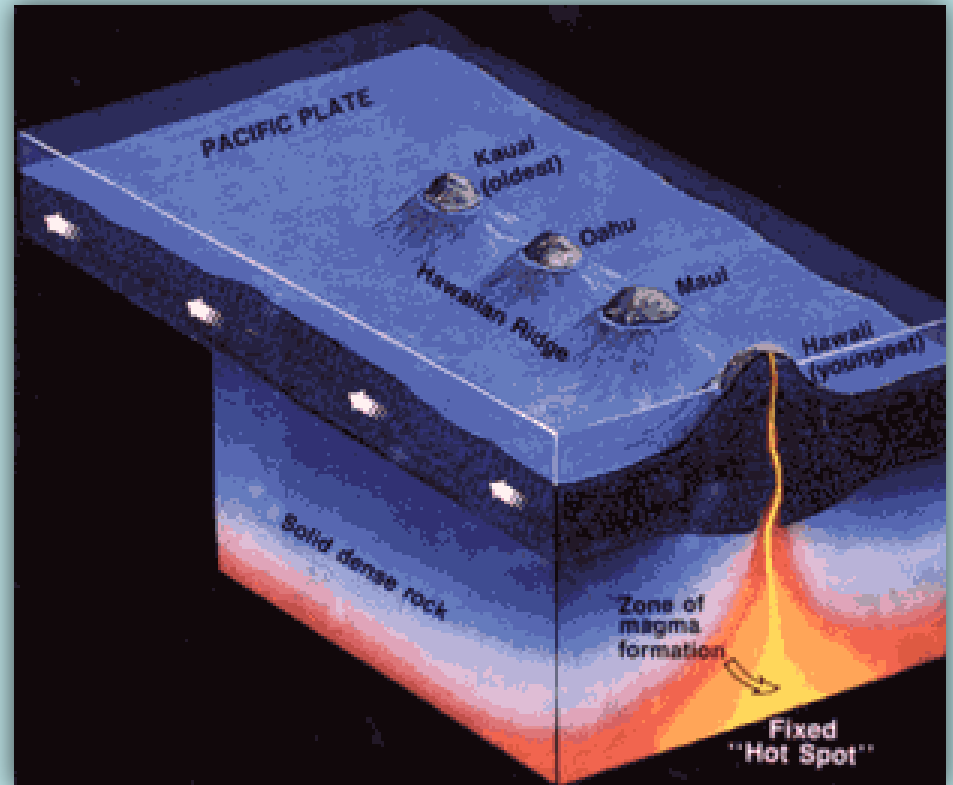


Yellowstone is a hotspot



Hotspots

- Tectonic plate moves over a magma "plume"
- Occasionally erupts, creating a volcano
- Hawaii — basic
- Yellowstone - acid



Volcanic hazards

- *Most hazards during eruptions are caused by what comes out of a volcano*
- *In worst case scenarios then a volcano may violently explode*



Hazards - ash clouds

- *Slow moving*
- *Weight of ash can collapse buildings*
- *Destroys crops, pollutes water*
- *Affects air traffic*
- *Can enter high atmosphere and cause cooling – disrupting climate*



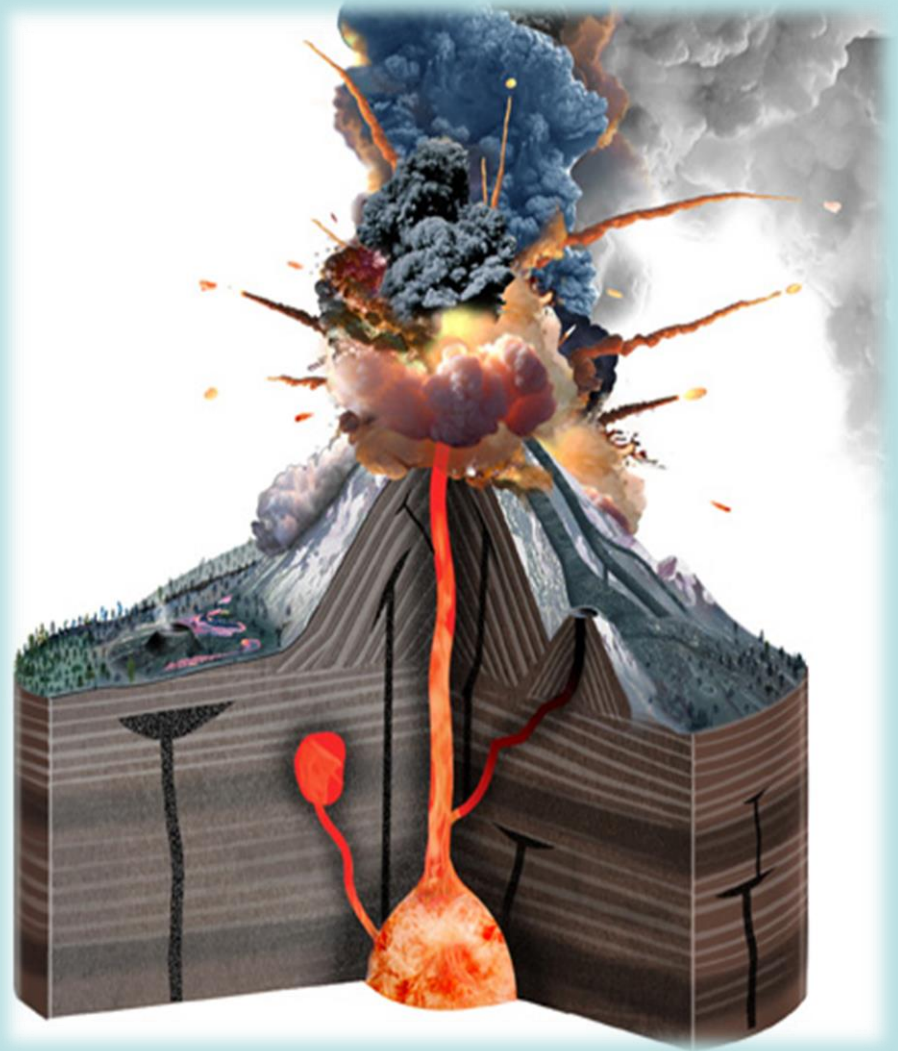
Hazards - lava bombs

- *Molten rocks thrown out of volcano*
- *Pumice - smaller rocks*
- *Travel short distances*
- *Can start fires*



An acid volcano

- *Potential for violent eruptions*
- *Slow moving lava*
- *Explosions*
- *Hot ash/cinders*
- *Pyroclastic flows*
- *Real danger!*



History of eruptions

- *1800 BC – destruction of Bronze age settlements – then several more times*
- *79 AD – destruction of Pompeii*
- *At least 40 times until the last eruption in 1944 – witnessed by allied troops towards the end of WWII*
- *= once every 40-50 years*

Buried alive!



Reducing the risks

- *Round-the-clock monitoring of the volcano*
 - *Tremors, gasses, changes in water*
- *Identifying hazard areas*
 - *Weak spots, secondary vents, predicting routes of pyroclastic flows*
- *Creating an evacuation plan*
 - *Zoning, warning systems, public education*