

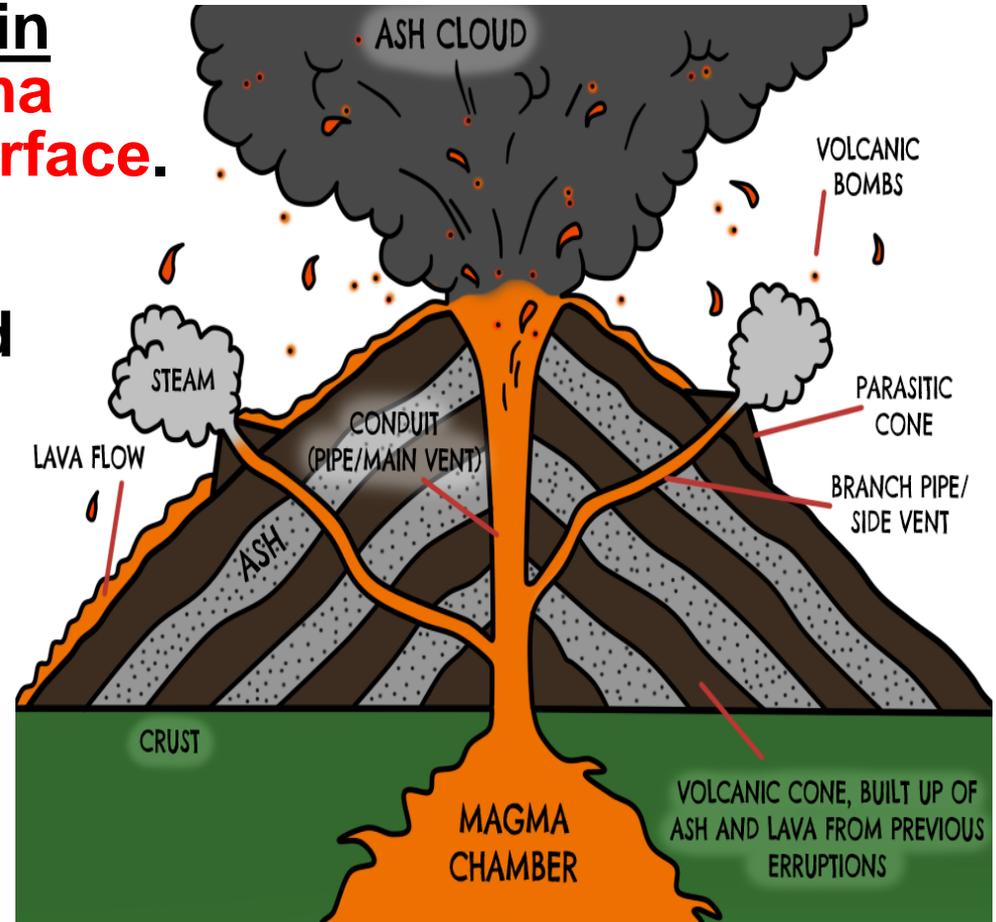
What is Volcanism?

- A volcano is a mountain that forms when **magma reaches the Earth's surface**.

- Magma develops and collects in areas called **magma chambers**.

- Magma is less dense than the solid rock around it.

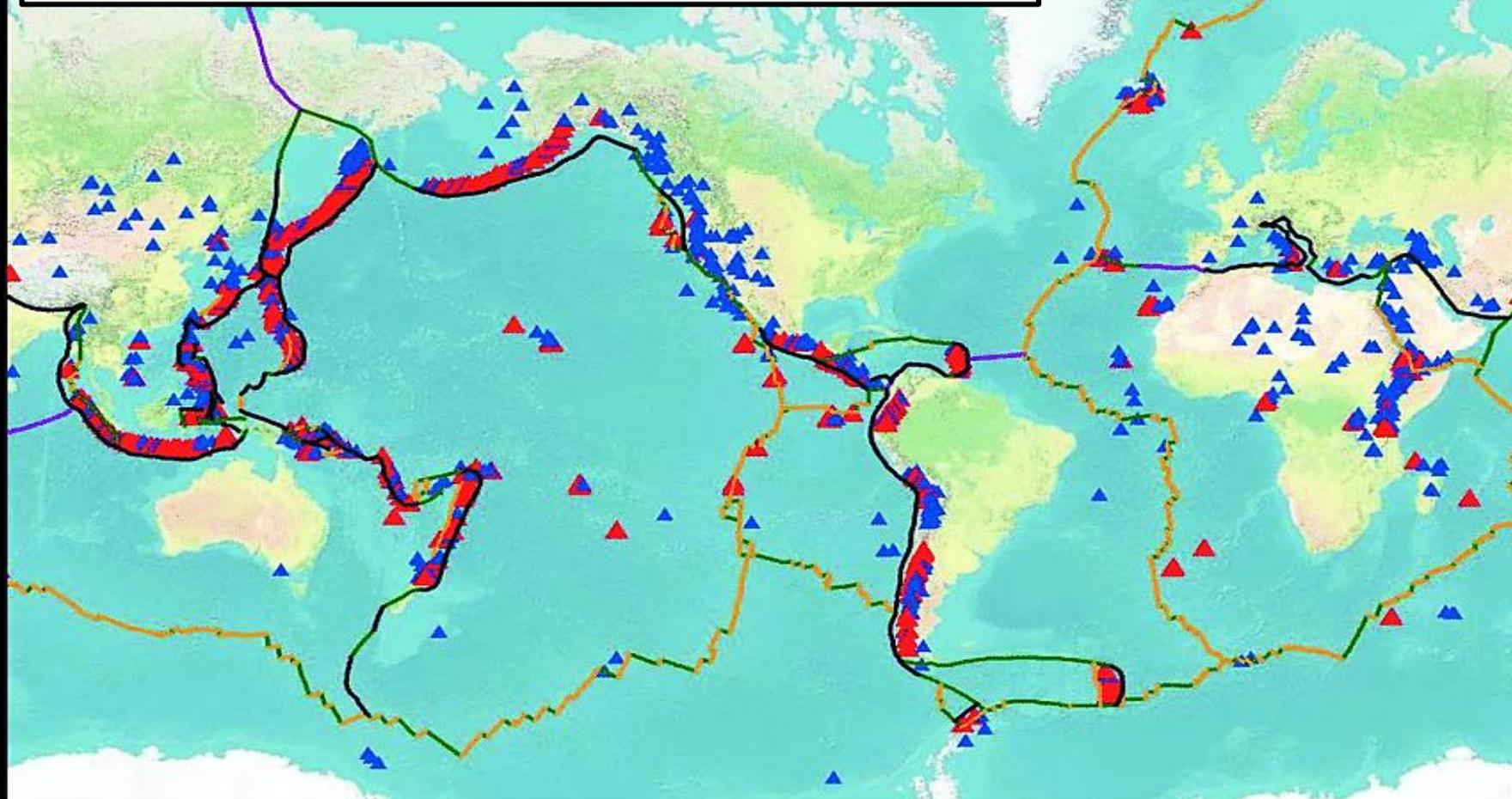
- Magma can also easily migrate (flow) if a structural zone allows movement.



- When a **rupture on the crust** is present, magma rises to the surface and escapes, resulting in **volcanism**.

Volcano Distribution

during the current geological epoch

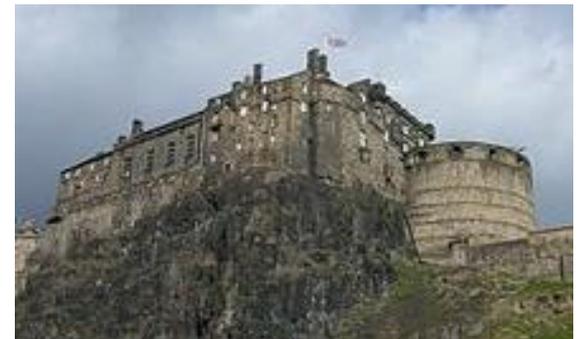


△ Activity since 1900, △ Activity since ~11700 YA

0 5,000 km

Volcanic Activity

- **Active** - activity present in the last few centuries:
 - Mauna Loa, HI (1984)
 - Mt. St. Helens, WA (1980)
- **Dormant** - “quiet” for the last hundreds to thousands of years, but still have potential to erupt:
 - Mt. Elbrus, Russia (~2000 years ago)
- **Extinct** - no eruption in historical times, unlikely to erupt again, no longer have magma supply:
 - Castle Rock, Edinburgh, Scotland (~350 million years ago)



Currently erupting volcanoes

2020-11-14

www.volcanodiscovery.com

-  : in eruption
-  : minor activity



45 volcanos are active RIGHT NOW!

Volcanic Eruption: Non-explosive

- Most volcanoes erupt basalt, a fluid **low viscosity lava** that erupts *effusively* (quietly) and forms *flows* with occasional *fountains*.



- **Higher viscosity lava** with low gas content produces bulging lava *domes*.

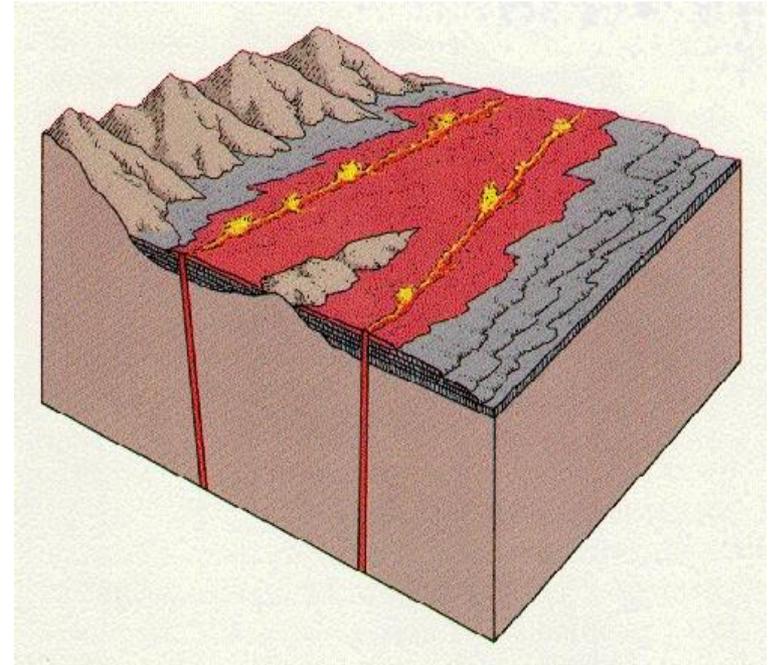
Flood Basalts



Columbia Flood Basalts in WA

- Multiple, “quiet” eruptions
- Lava *plateau* forms
- Flood basalt volcanism has been connected to major mass extinction events in the past.

- Large (10-100 square miles) outpourings of very low viscosity basaltic lava



Volcanic Eruption: Explosive

Very high viscosity magma prevents the release of volcanic gases; **gases accumulate**, and the **magma pressure builds up**... until it is blasted out in an explosion!

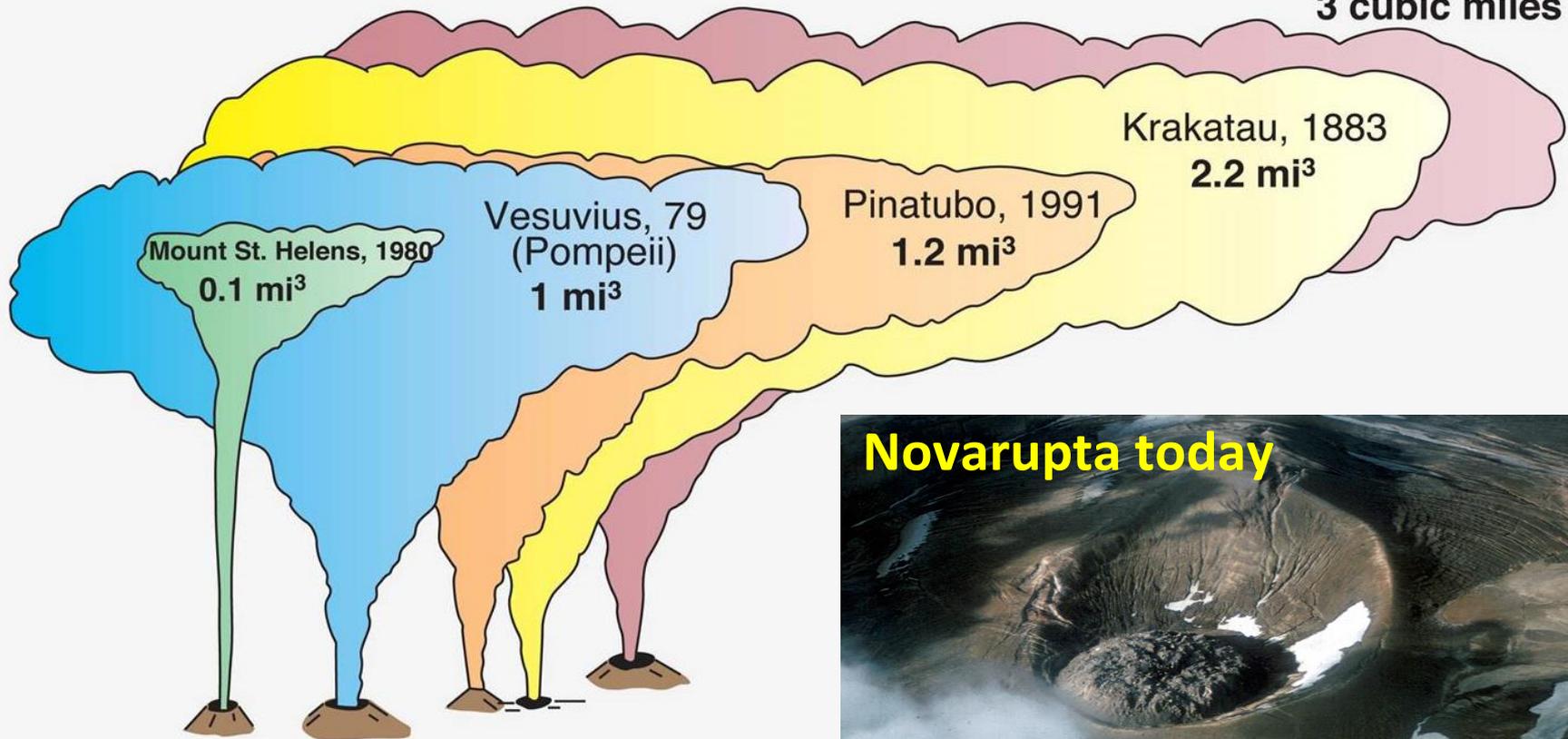


Explosive eruptions can send rocks, dust, gas and pyroclastic material **up to 20 km** into the atmosphere.

The Most Powerful Volcanic Eruption of the 20th Century

Went almost unnoticed - people in Juneau, Alaska, about 750 miles from the volcano, heard the sound of the blast – *over one hour after it occurred.*

• **NOVARUPTA**
Alaska 1912
3 cubic miles



Explosive Eruption Diagram

