

**GEOL 101 Lecture 5B**  
**Dr. J. Steven Kite**  
**West Virginia University**

**Volcanoes (I):**

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*Tie to Previous Material*

- **Composition of Magma: Important To Nature of Volcanic Eruptions and Resulting Landforms.**



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Explosive  
Eruption:

Pyroclastics

Pinatubo,  
Philippines  
1991

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### 3 Eruption Types:

- Gaseous: Few Landforms
- Explosive: Viscous Magma -
- Effusive: Fluid Magma - Basaltic - Lava

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## 2 Types of Eruption Apertures:

- Fissures
- Vents

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Basaltic Fissure Eruption, Hawaii 1983



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## Fissure Eruptions

- Basaltic: Fluid Lava
  - Flood Basalts With Many Feeder Dikes; Basalt Plateaus



Columnar Jointing

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## Dry Falls, Washington



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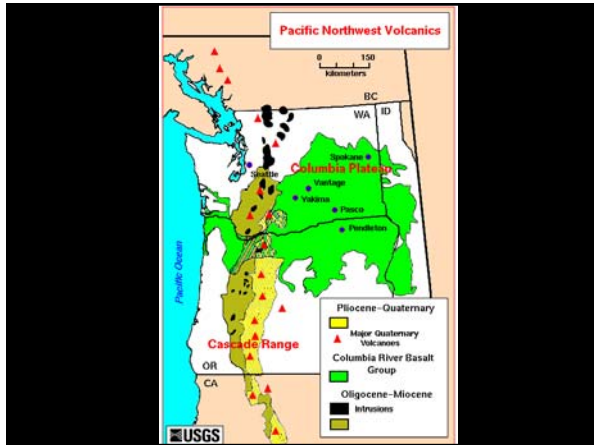
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***Vent Eruptions =  
True Volcanoes***



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## Basaltic Eruptions: *Fluid Lava*

- **Shield Volcano (Hawaiian) - Flank Eruptions**
- **Hawaii 33,000 ft Relief; *Olympus Mons* = 80,000 ft**
- **Late Eruptions from Mafic Magma Chamber may be Viscous**

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Basaltic Shield Volcano  
Mauna Kea, Hawaii

Shield Volcano



Basaltic Lava Flow

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Shield Volcano: Mauna Loa, Hawaii



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**Mauna Loa Central Vent,  
Mauna Kea in Distance**



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**Kupaianaha  
Shield, 1986**



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**Pu'u O'o Lava Tube, 1992**



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**Lava Tube,  
Hawaiian  
Volcanoes  
National Park**

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**Pu'u O'o - Royal Gardens Aa Flow 1983**

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**Kilauea Eruptions 1983-Date**

**181 Houses Destroyed  
13 km of Road Buried**

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**Pu'u O'o - Royal Gardens Aa Flow 1983**



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**Kupaianaha Flow Meets Pacific, 1988**



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**Rhyolitic Eruptions:  
Viscous Magma &  
Pyroclastics**

- Cinder Cones
- Lava Domes
- Minor Lava Flows

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**Tavurvur Volcano, New Guinea:  
Cinder Cone, Pyroclastics**



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**Ashfall, Papua New Guinea, 1994**



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**Cinder Cone: Mt. Etna, Italy**



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## Viscous (Rhyolitic) Magma

May Occur in Late Eruption Phases of  
Intermediate Magma Chamber



Post-1980  
Lava Dome  
Mt. St. Helens

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## Intermediate (Andesitic) Magma:

Composition Varies -  
*Viscous to Fluid*

- **Small Cinder Cones & Flows**  
**Grow into....**
- **Composite Cones**  
**(=Stratovolcanos)**  
– Composite of **Flows & Pyroclastics**

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