

VOLCANOES, EARTHQUAKES AND PLATE TECTONICS

September 29, 2003

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**VOLCANIC LANDFORMS**

**VOLCANO.** A vent through which magma, ash, and gases erupt, or the structure built around a vent by such eruption.

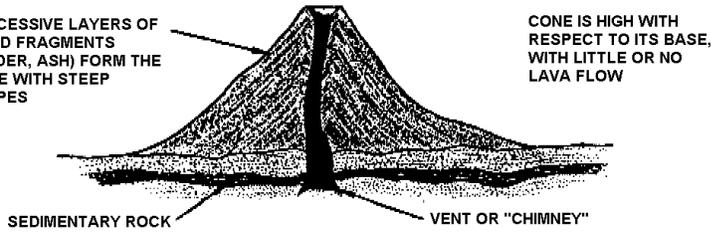
<b>VOLCANO TYPE</b>		<b>EXAMPLE</b>
<b>CINDER CONE</b>	Formed by layers of pyroclastic material (cinder)	Wizard Island Cerro Mono Blanco Ver. Mex.
<b>SHIELD OR DOME</b>	Formed by relatively quiet (not very explosive) outpouring of non-viscous lava flows (basalts)	Mauna Loa, HI Mauna Kea,
<b>STRATO OR COMPOSITE</b>	Formed by the intercalation of layers of pyroclastic material and lava flows Have steep sides. Eruptions are more explosive than those of shield volcanoes	Mt. Saint Helens, USA Cascade Mountains, USA Popocatepetl, Mexico Vesuvius, Italy Mt. Etna, Italy Mt. Fuji, Japan

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## CINDER CONE (EXPLOSIVE)

SUCCESSIVE LAYERS OF SOLID FRAGMENTS (CINDER, ASH) FORM THE CONE WITH STEEP SLOPES



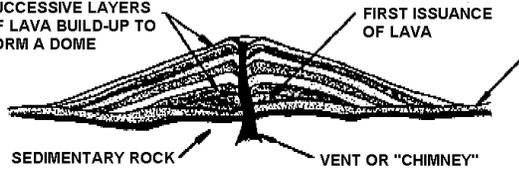
CONE IS HIGH WITH RESPECT TO ITS BASE, WITH LITTLE OR NO LAVA FLOW

-slope 30-40 degree  
-100-400 m high  
-basalt-andesite  
-violent pyroclastic ejections

EXAMPLE:  
Cerro Mono Blanco  
(Veracruz, Mexico)

## SHIELD DOME (QUIET)

SUCCESSIVE LAYERS OF LAVA BUILD-UP TO FORM A DOME



FIRST ISSUANCE OF LAVA

ORIGINAL CONTOUR OF EARTH'S SURFACE (CAN BE EITHER DRY LAND OR THE BOTTOM OF THE SEA)

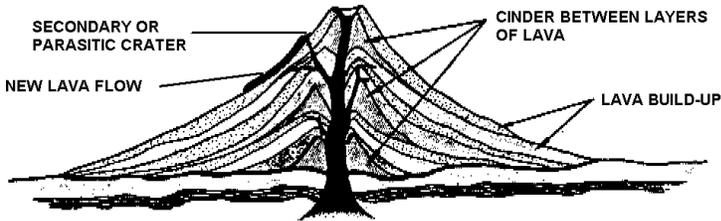
-slope 6-12 degrees  
-dome shaped profiles  
-up to 9000 m high  
-basalt  
-gentle eruption + fire mountains

EXAMPLE:  
Hawaiian Volcanoes

## STRATOVOLCANO COMPOSITE

SECONDARY OR PARASITIC CRATER

NEW LAVA FLOW

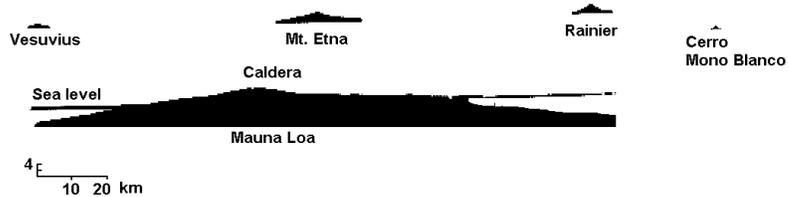


CINDER BETWEEN LAYERS OF LAVA

LAVA BUILD-UP

-slope 20 degrees  
-100 to 3500 m high  
-often violent

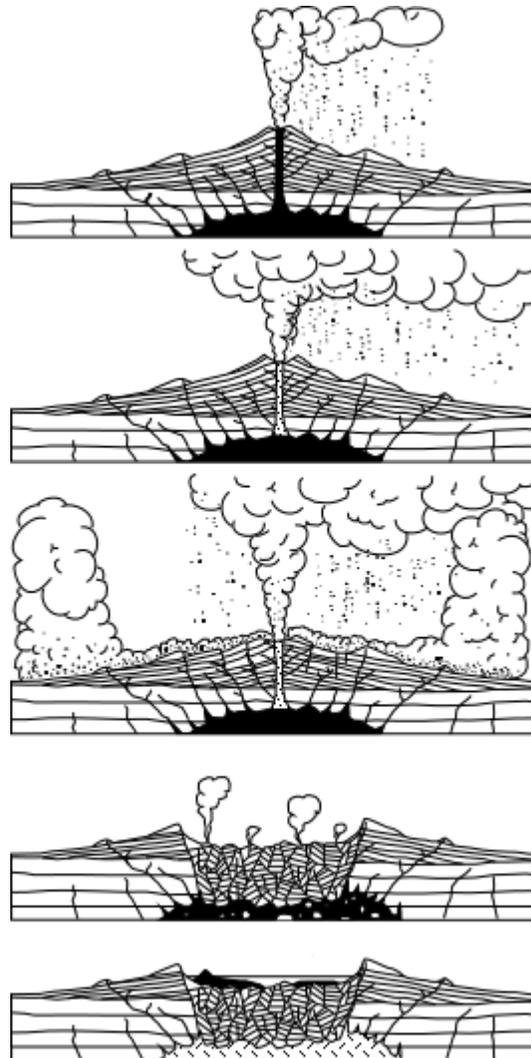
EXAMPLE:  
Mt. Saint Helens  
Mt. Rainier  
Mt. Etna  
Popocatepetl



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Other volcanic features

A *caldera* is a volcano that erupts so explosively that little material builds up near the vent. Eruptions empty part or all of the underlying magma chamber, leaving the region around the vent unsupported and causing the region to sink under its own weight. This results in a basin-shaped depression that is roughly circular and is usually several kilometers or more in diameter. The lava erupted is the most viscous and generally the coolest.



After H. Williams, 1951

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**DENUDDTION OF VOLCANIC TERRAINS**

(DENUDDTION = The sum total of the processes which result in the general lowering of the land surface. It is normally taken to consist of the processes of weathering, transportation and erosion.

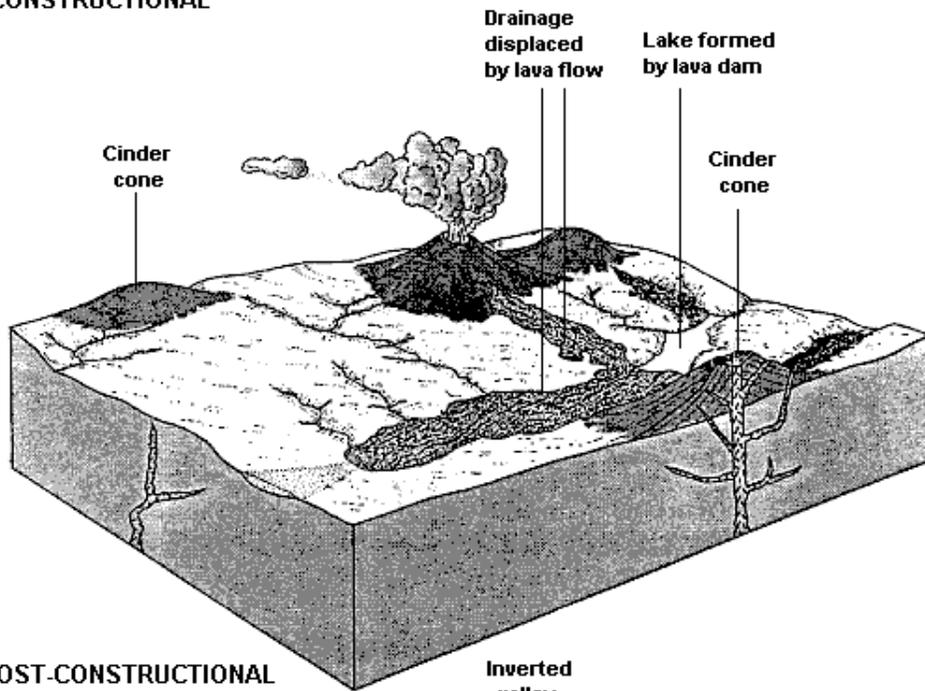
**GEOMORPHIC STAGES**

<b>CONSTRUCTIONAL</b>	Develops during igneous activity
<b>POST-CONSTRUCTIONAL</b>	Following the cessation of igneous activity, cinder cones quickly eroded. Some volcanic necks exposed
<b>LATE</b>	Stream erosion restores and reintegrates drainage patterns

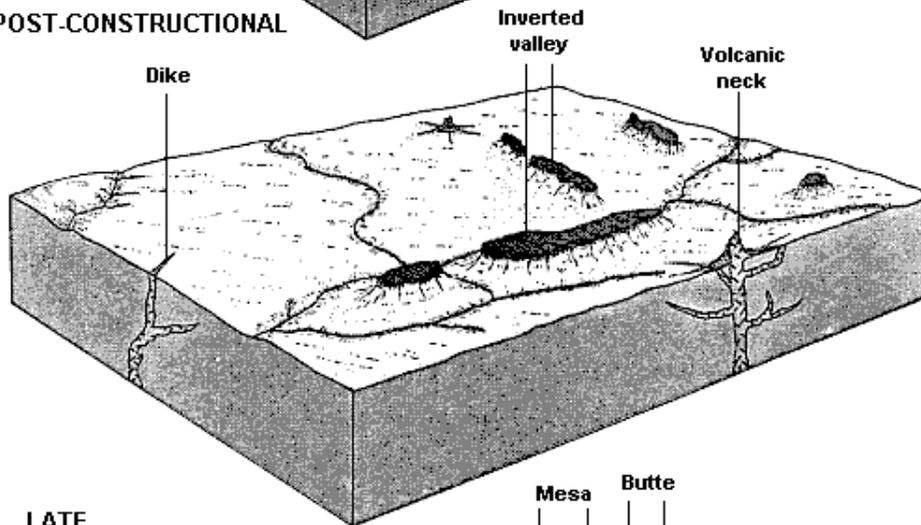
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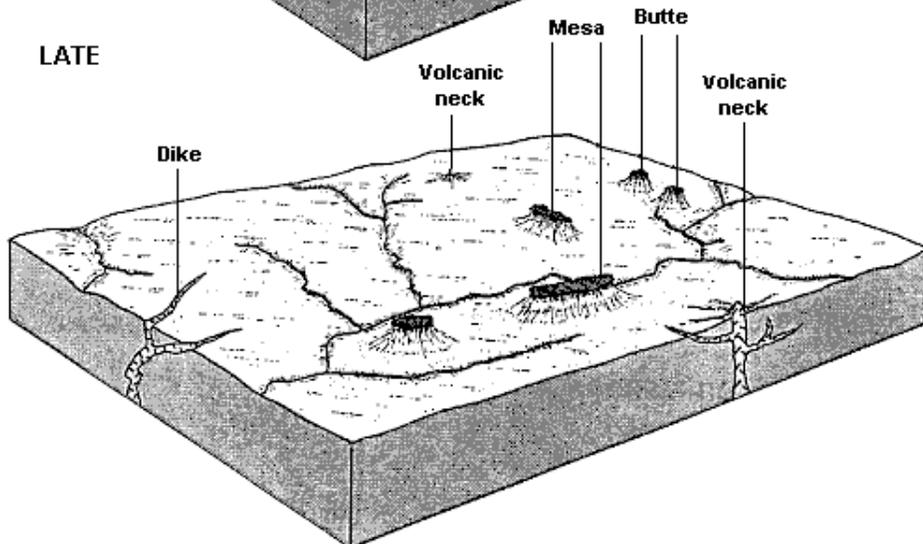
## CONSTRUCTIONAL



## POST-CONSTRUCTIONAL



## LATE



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