

Volcanos



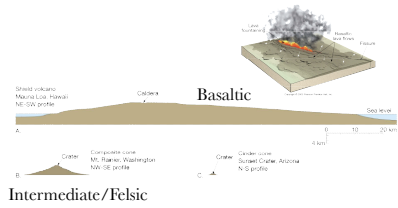
1

Extrusive Igneous Rocks

	Granitic (Felsic)	Andesitic (Intermediate)	Basaltic (Mafic)
Aphanitic (fine-grained)	Rhyolite	Andesite	Basalt
Porphyritic	*Porphyritic* precedes any of the above names whenever there are appreciable phenocrysts		
Glassy	Obsidian (compact glass) Pumice (frothy glass)		
Pyroclastic (fragmental)	Tuff (fragments less than 2 mm) Volcanic Breccia (fragments greater than 2 mm)		

2

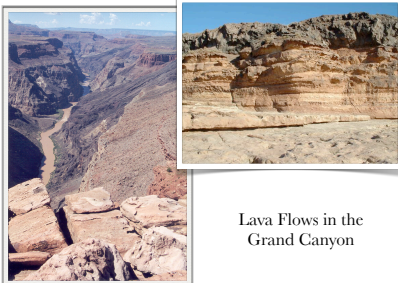
The Shapes of Volcanoes



3

Eruption Explosiveness

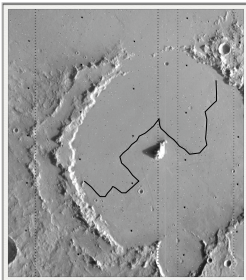
4



Lava Flows in the Grand Canyon

9

Lava Flow on Mars



10

Columnar Jointing

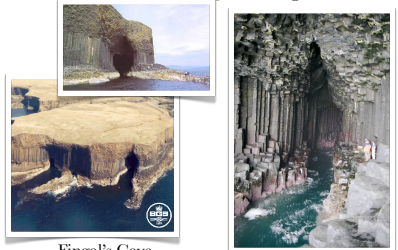


Cooling basalts frequently form these structures.

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11

Columnar Jointing



Fingal's Cave

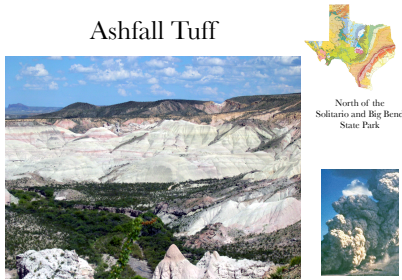
12

Pyroclastics



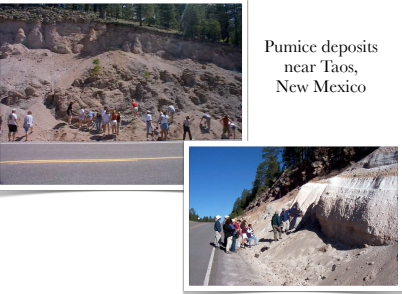
13

Ashfall Tuff



14

Pumice deposits near Taos, New Mexico



15

Volcanic Bombs



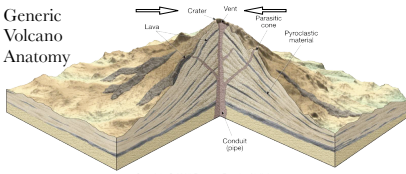
16

Volcanos

Types and Styles

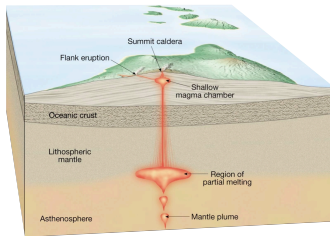
17

Generic Volcano Anatomy



18

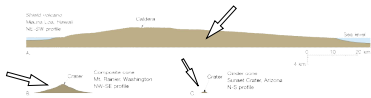
Magma Chamber



Example: magma chamber under Hawaii

19

Types of Volcanos



20

Shield Volcano

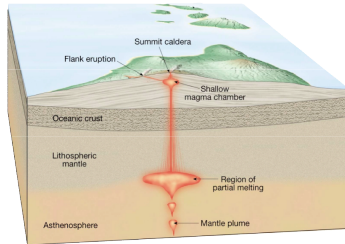


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Mauna Loa - Hawaiian islands are composed almost entirely of basalt flows.

21

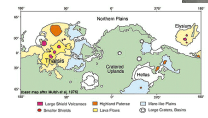
Shield Volcanos



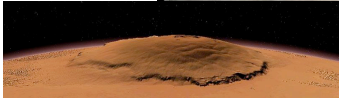
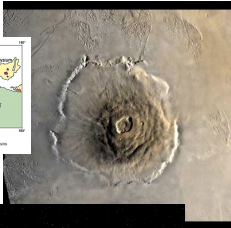
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22

Shield Volcanos

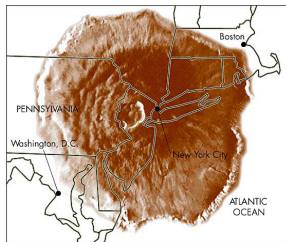


Mons Olympus
Mars



23

Shield Volcanos



24



Cinder Cone Volcanos

Composed
of basaltic
cinders.



Parícutin Volcano



Capulin Mtn
New Mexico

25



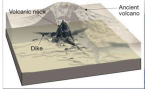
Sunset Crater Volcano National Monument
National Park Service



Laurence Farent

26

Volcanic Neck



Ancient volcano



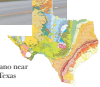
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27



Volcanic Neck

Eroded volcano near
Alpine, Texas



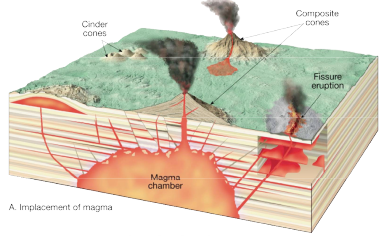
28

Devil's Tower, Wyoming



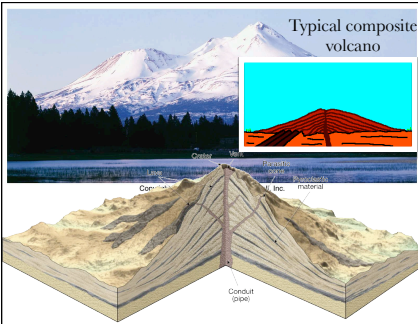
29

Composite Cone (Stratovolcano)



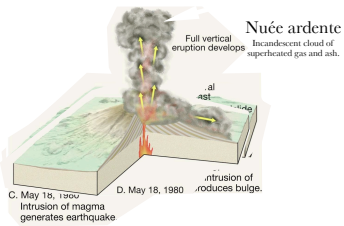
30

Typical composite volcano



31

Mt. St. Helens



32

Nuée ardente at Mt. St. Helens



33

St. Helens Eruption



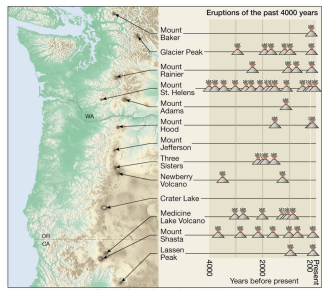
34

Mt. St. Helens
before



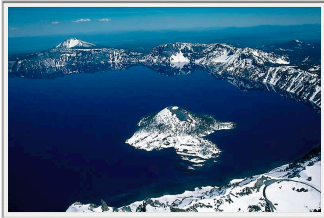
and after.

35



36

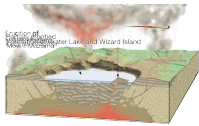
Caldera



Crater Lake, Oregon

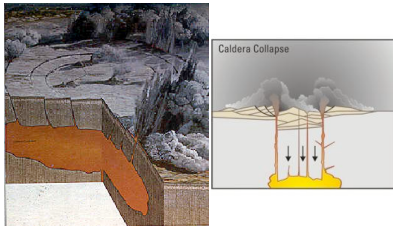
37

Caldera Formation

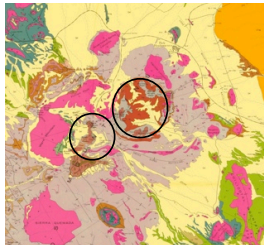


Caldera forms when a magma chamber collapses.

38

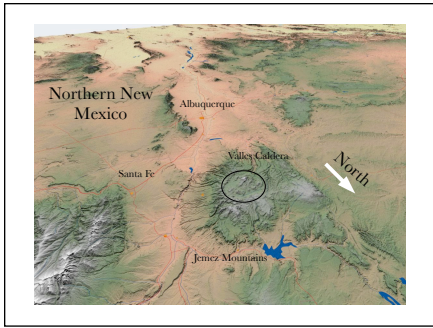


39

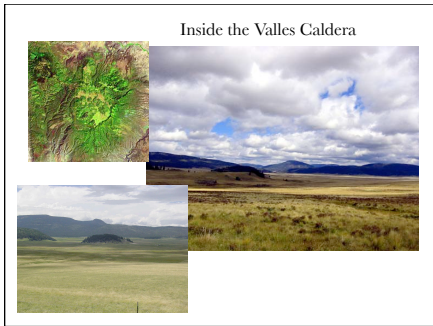


Some calderas
in Big Bend
National Park

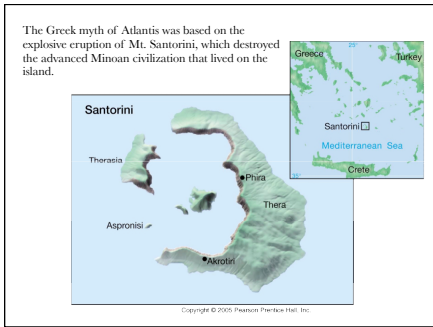
40



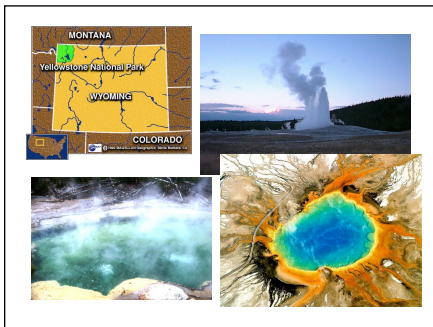
41



42



43



44

The result of **Nuée ardente** near populated areas.

St. Pierre

Pompeii

Score:
Volcanos - 2
Humans - 0

49

Pompeii

Earthquake in 62 AD

50

Pompeii
August 24th, 79 AD

51

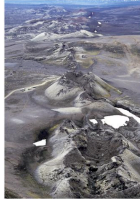
Fragmentation Surface

Magma begins to rise in bubble form and rise 20%

52

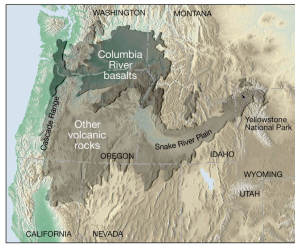


Fissure Eruptions in Iceland



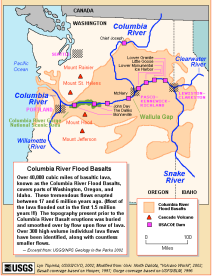
57

Fissure Eruptions



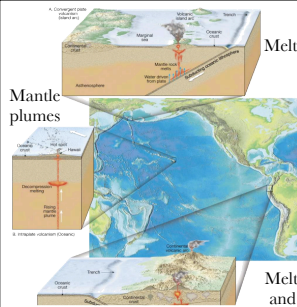
58

Columbia River Flood Basalts



59

Mantle plumes



Melting oceanic plates

Origins of most (not all) magmatism

Melting oceanic plates and continental crust

60

Next Lecture



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WEATHERING
