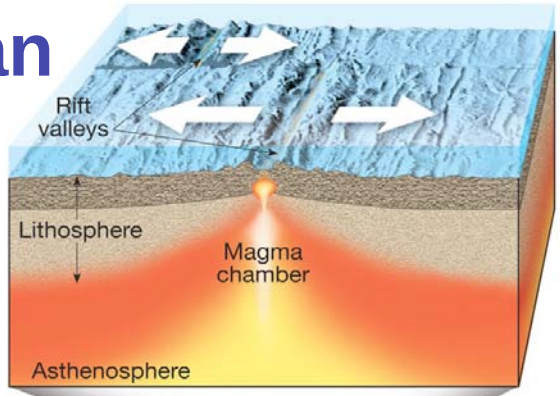
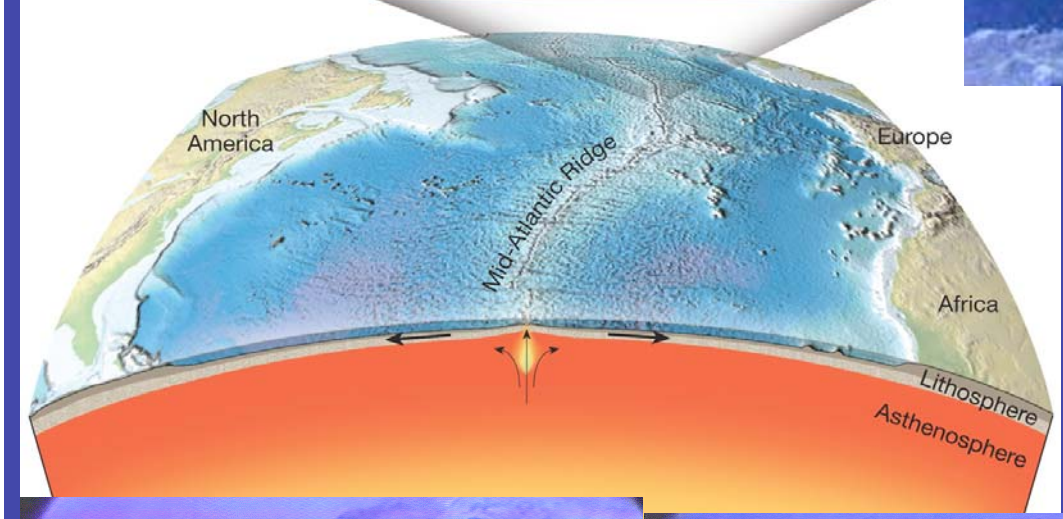
Mid-Ocean Ridge

80% of world's volcanism

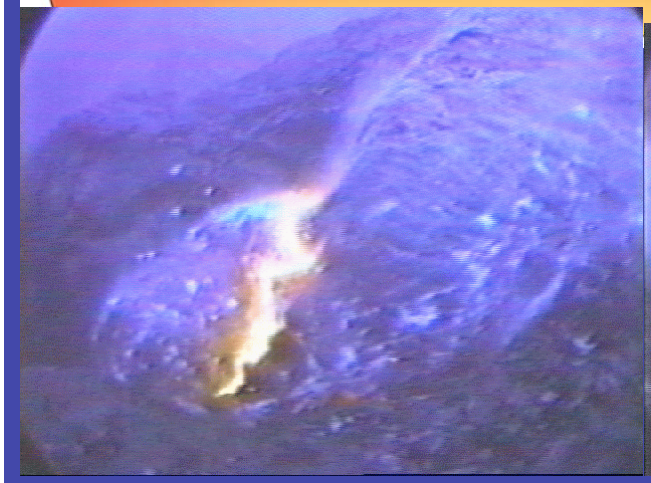




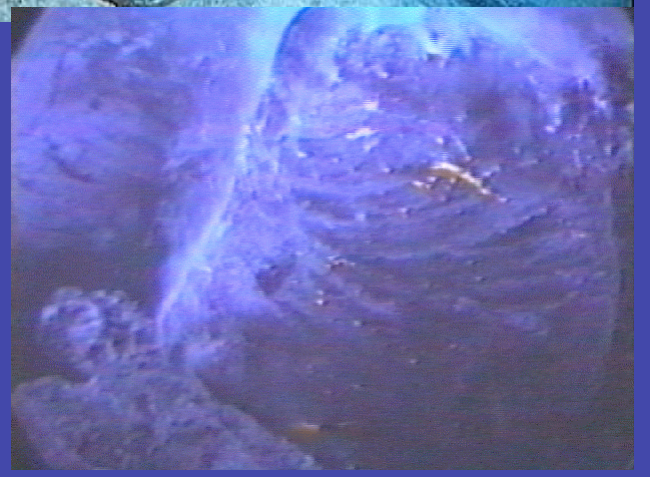


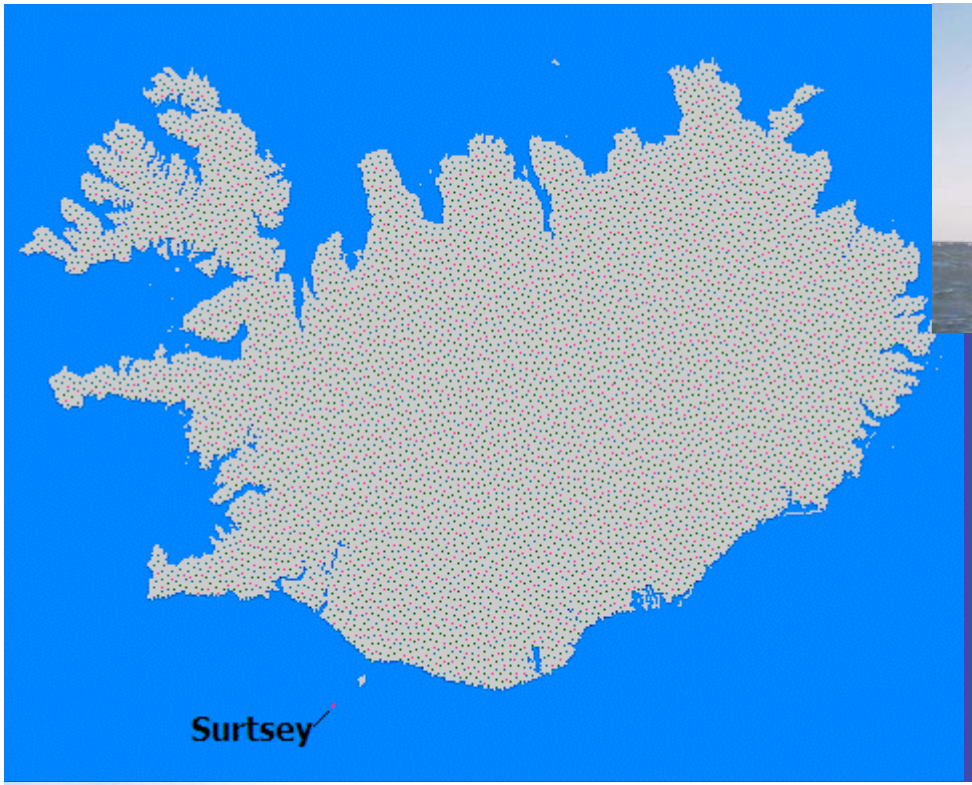










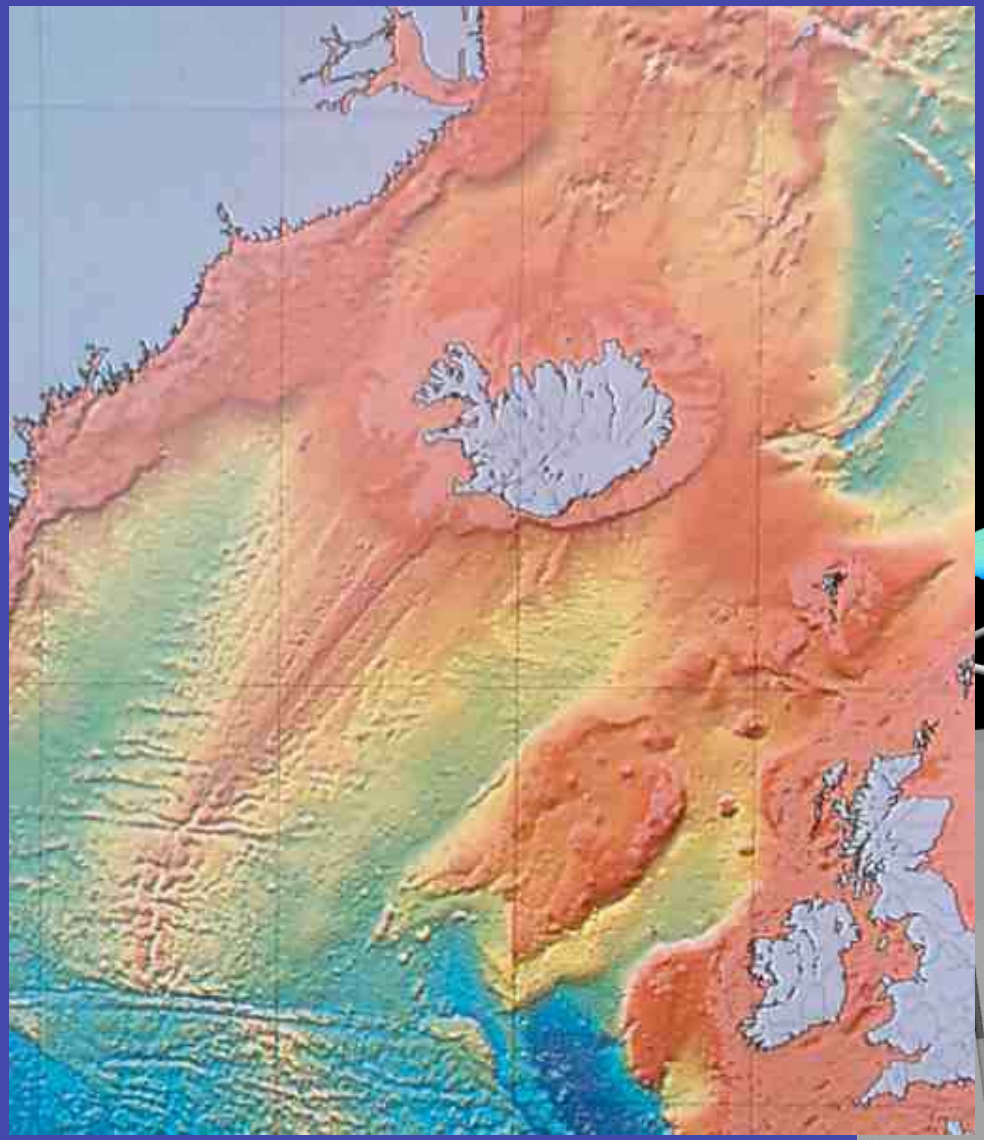




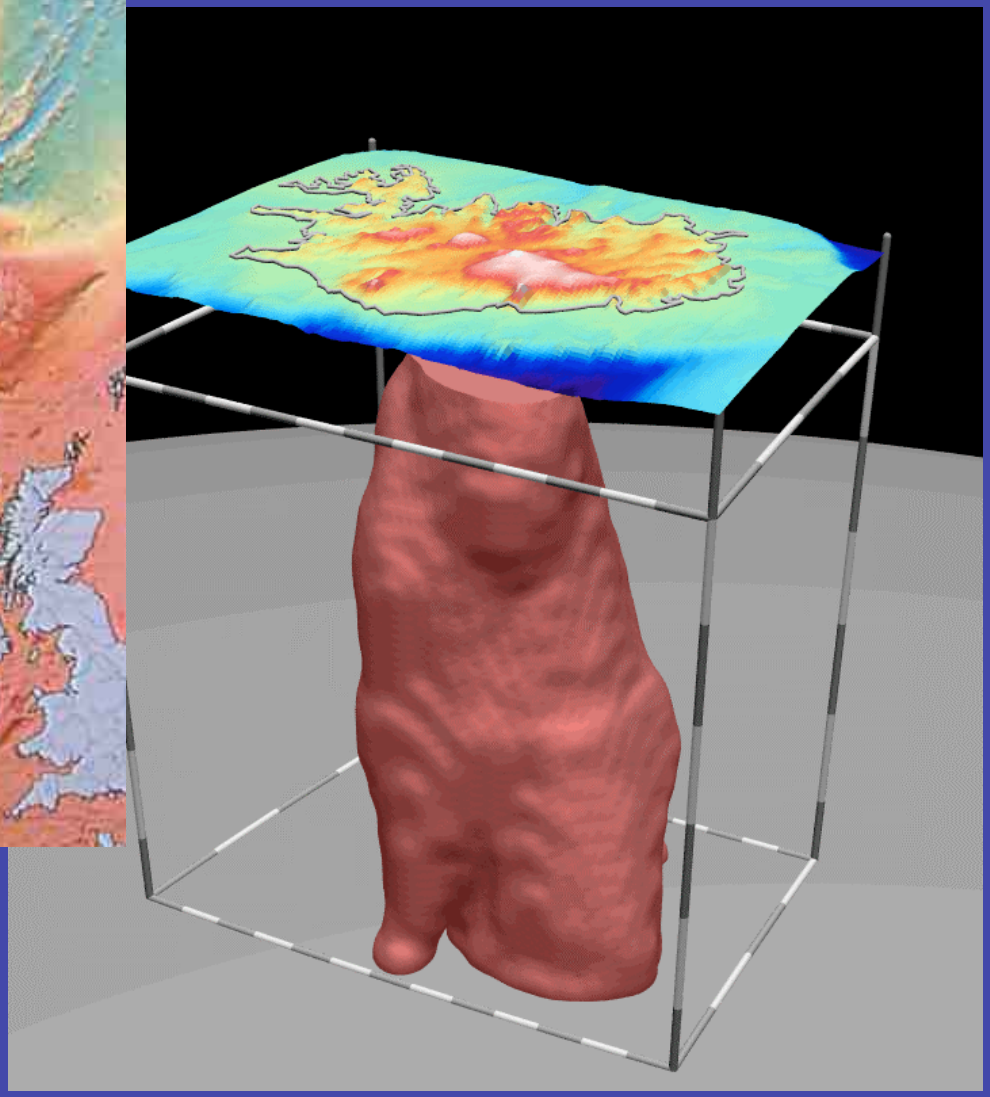


Surtsey, 1963

Iceland



1) Hot spot



2) Mid-ocean ridge



Kilauea

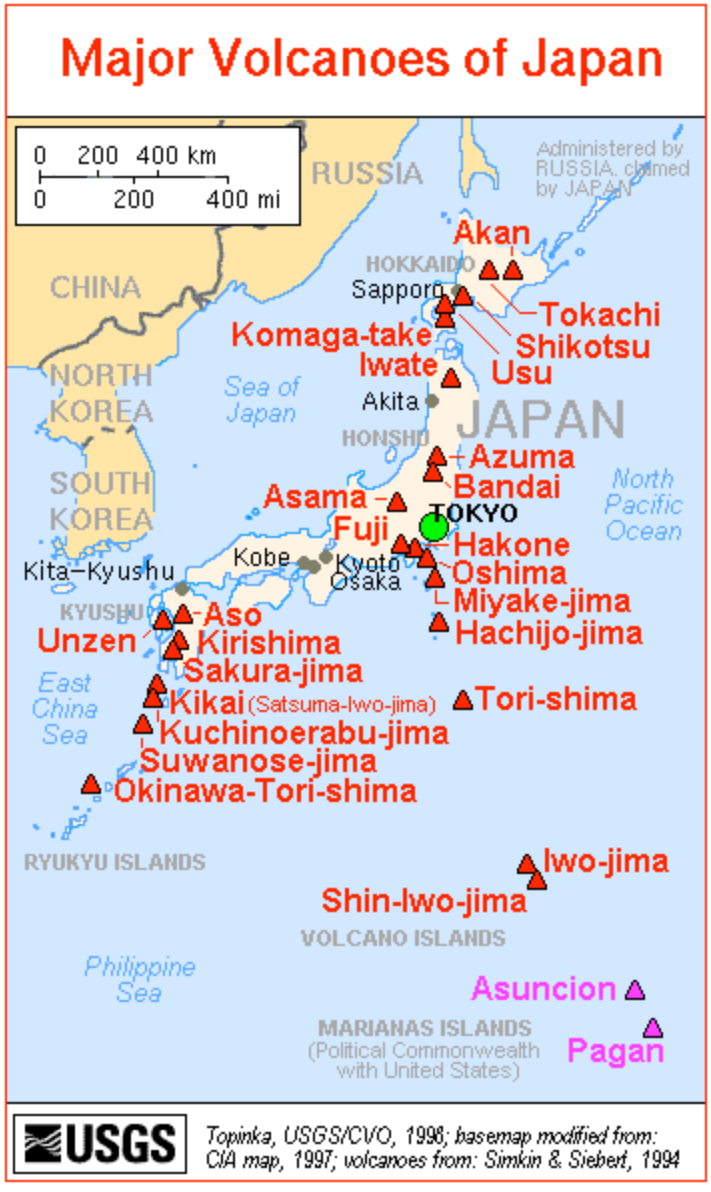


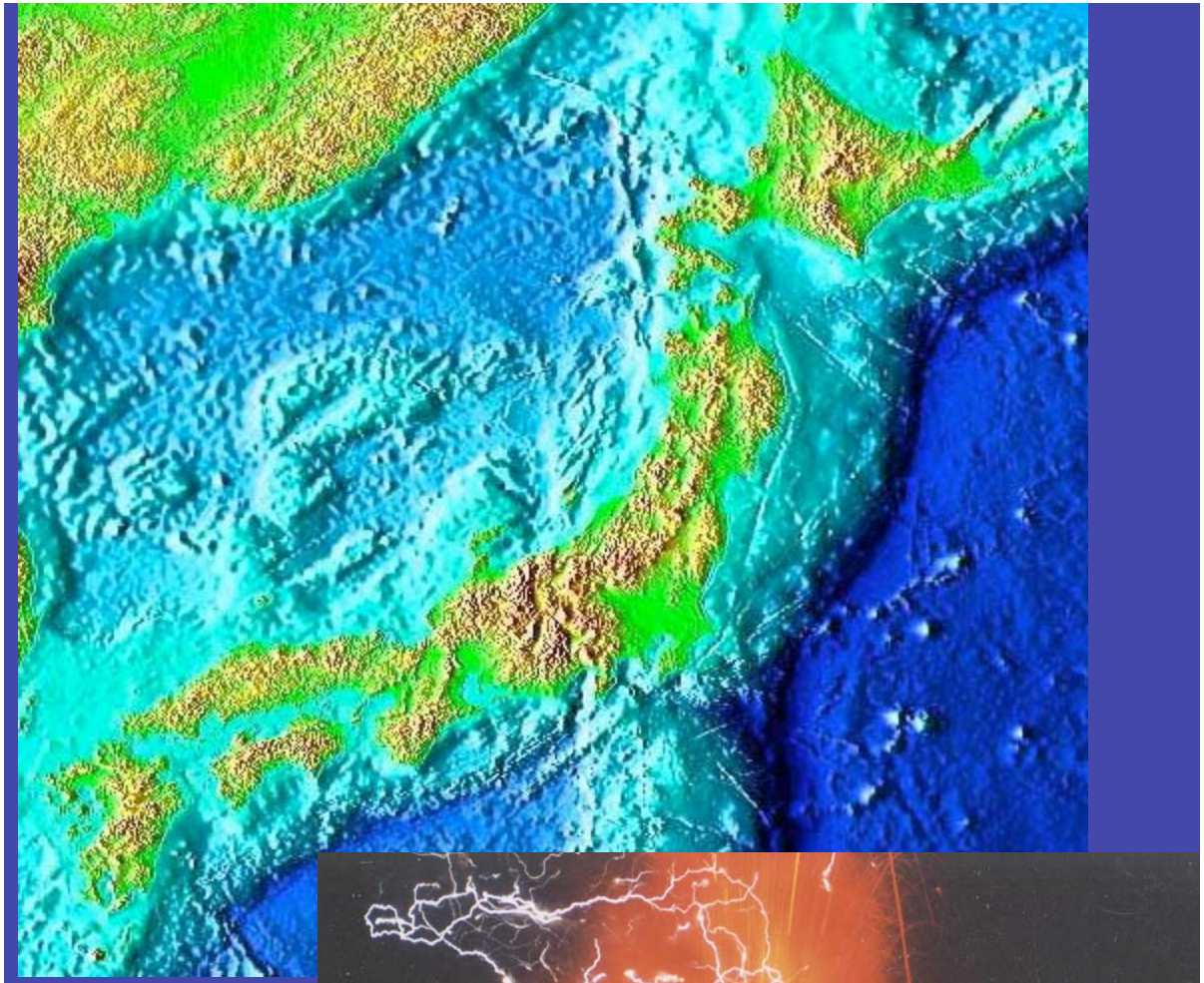
Hawaiian Hot Spot

mostly lavas






Major Volcanoes of Japan
0 200 400 km
0 200 400 mi
RUSSIA
Administered by RUSSIA, claimed by JAPAN
CHINA
HOKKAIDO
Sapporo
Akan
Tokachi
Shikotsu
Komaga-take
Iwate
Usu
NORTH KOREA
Sea of Japan
Akita
JAPAN
HONSHU
Azuma
Bandai
SOUTH KOREA
Asama
Fuji
TOKYO
North Pacific Ocean
Hakone
Oshima
Kita-Kyushu
Kobe
Kyoto
Osaka
Miyake-jima
Hachijo-jima
KYUSHU
Aso
Unzen
Kirishima
Sakura-jima
East China Sea
Kikai (Satsuma-Iwo-jima)
Tori-shima
Kuchinoerabu-jima
Suwanose-jima
Okinawa-Tori-shima
RYUKYU ISLANDS
Iwo-jima
Shin-Iwo-jima
VOLCANO ISLANDS
Philippine Sea
Asuncion
MARIANAS ISLANDS
(Political Commonwealth with United States)
Pagan
USGS
Topinka, USGS/CVO, 1998; basemap modified from: CIA map, 1997; volcanoes from: Simkin & Siebert, 1994

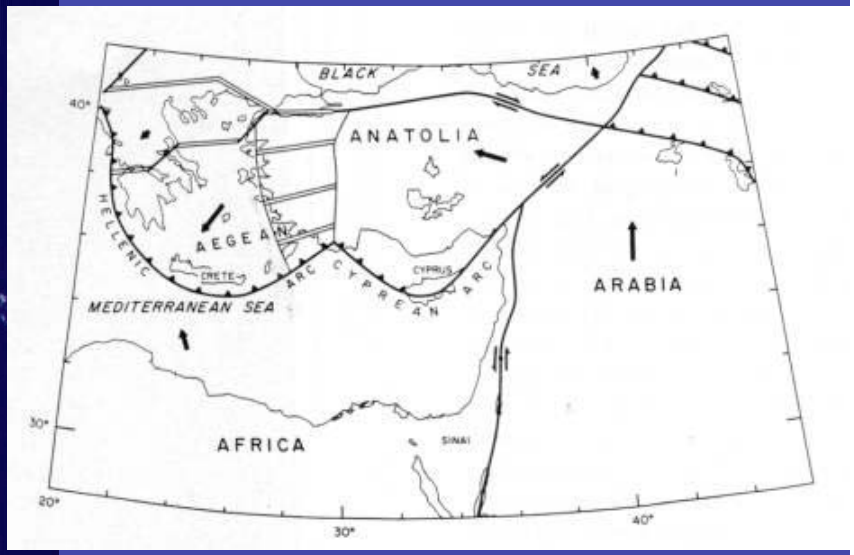




Sakura-jima





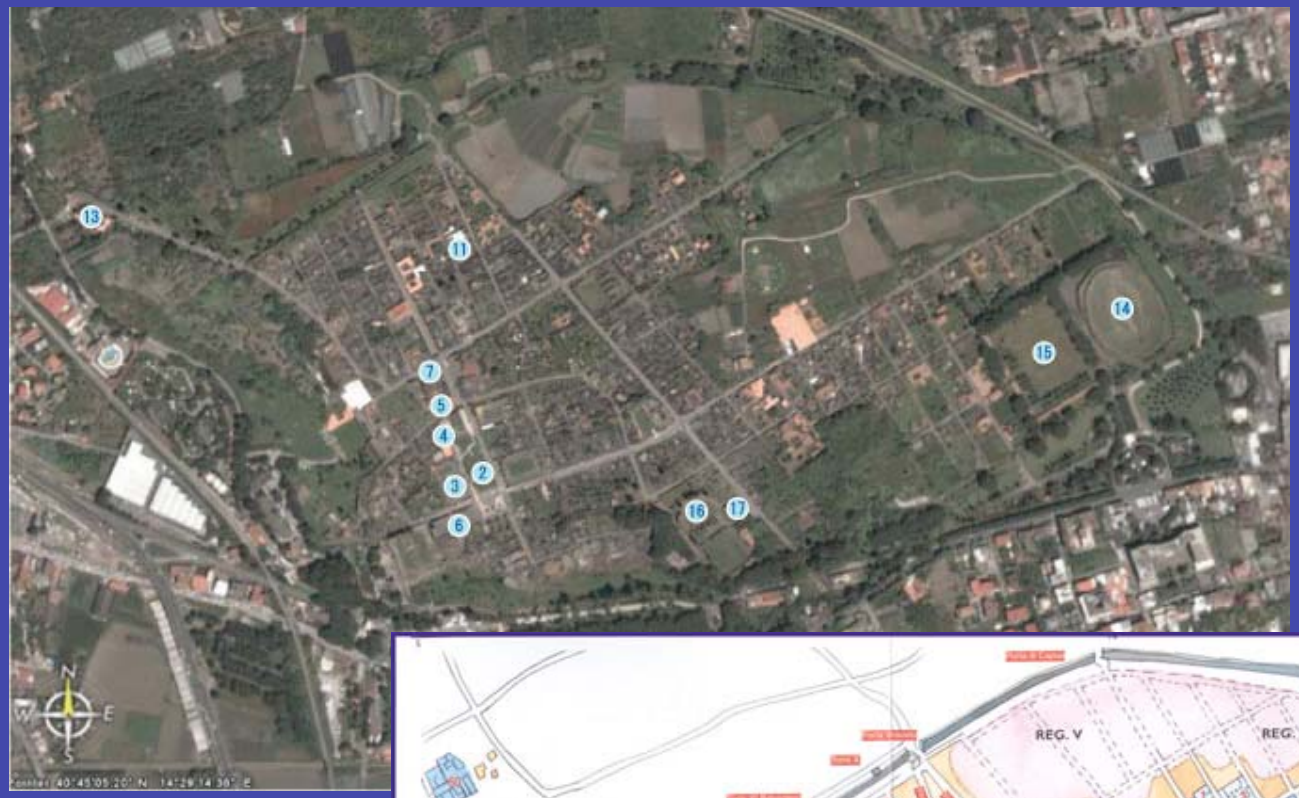


Santorini, 3500 yrs ago
Legend of Atlantis

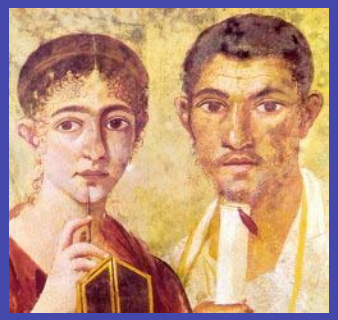


Vesuvius, 79 AD

City of Pompeii



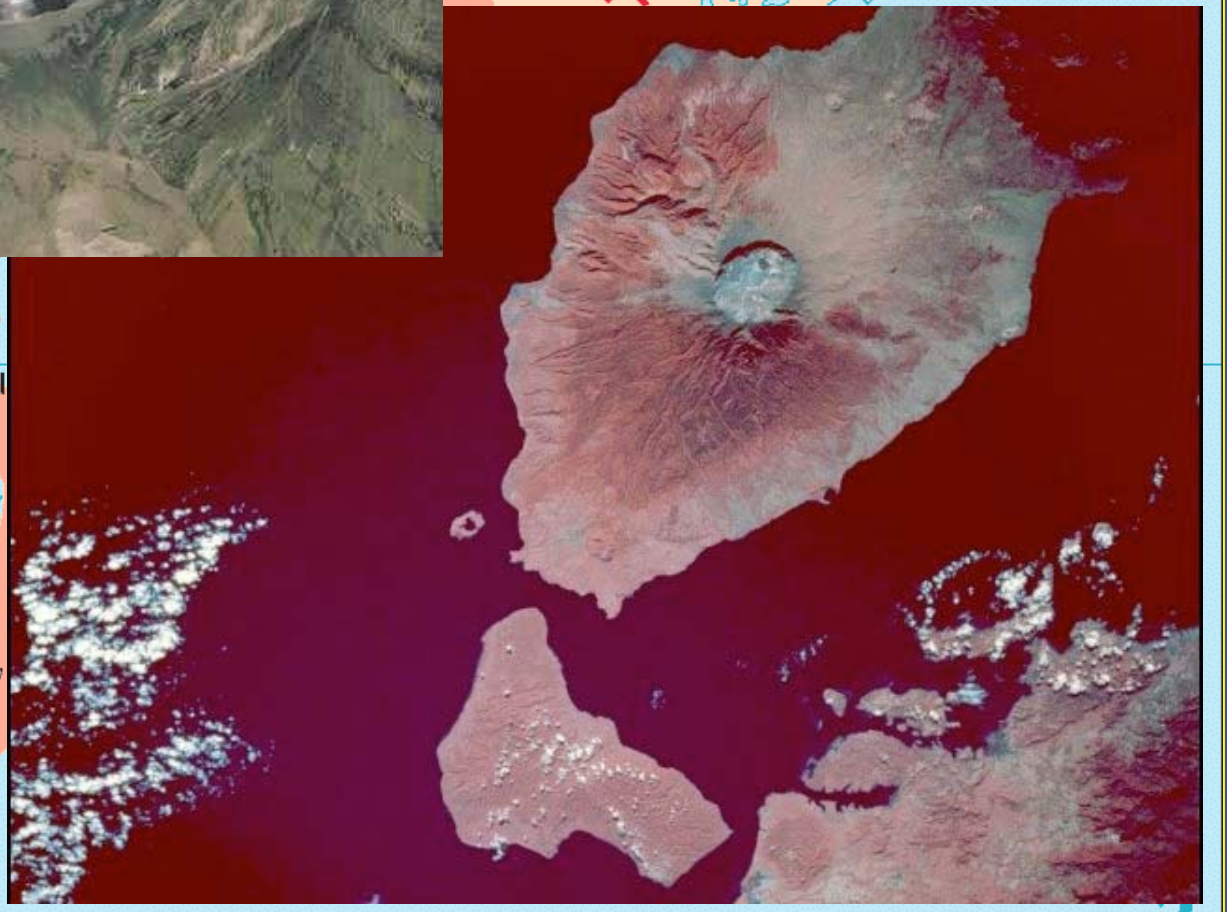


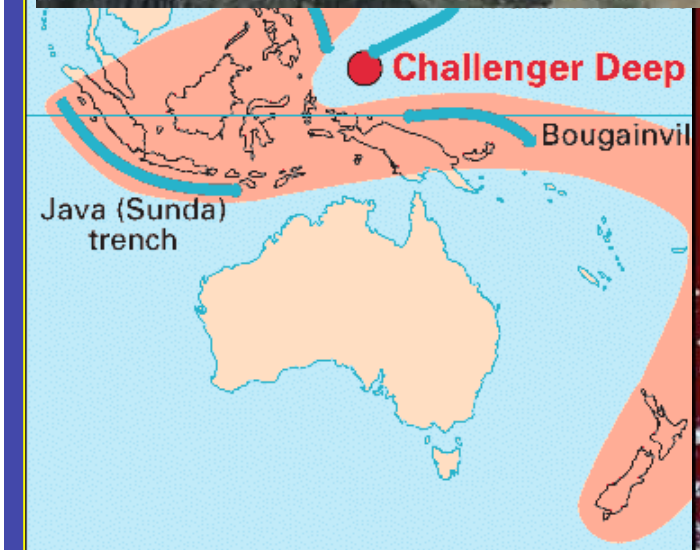




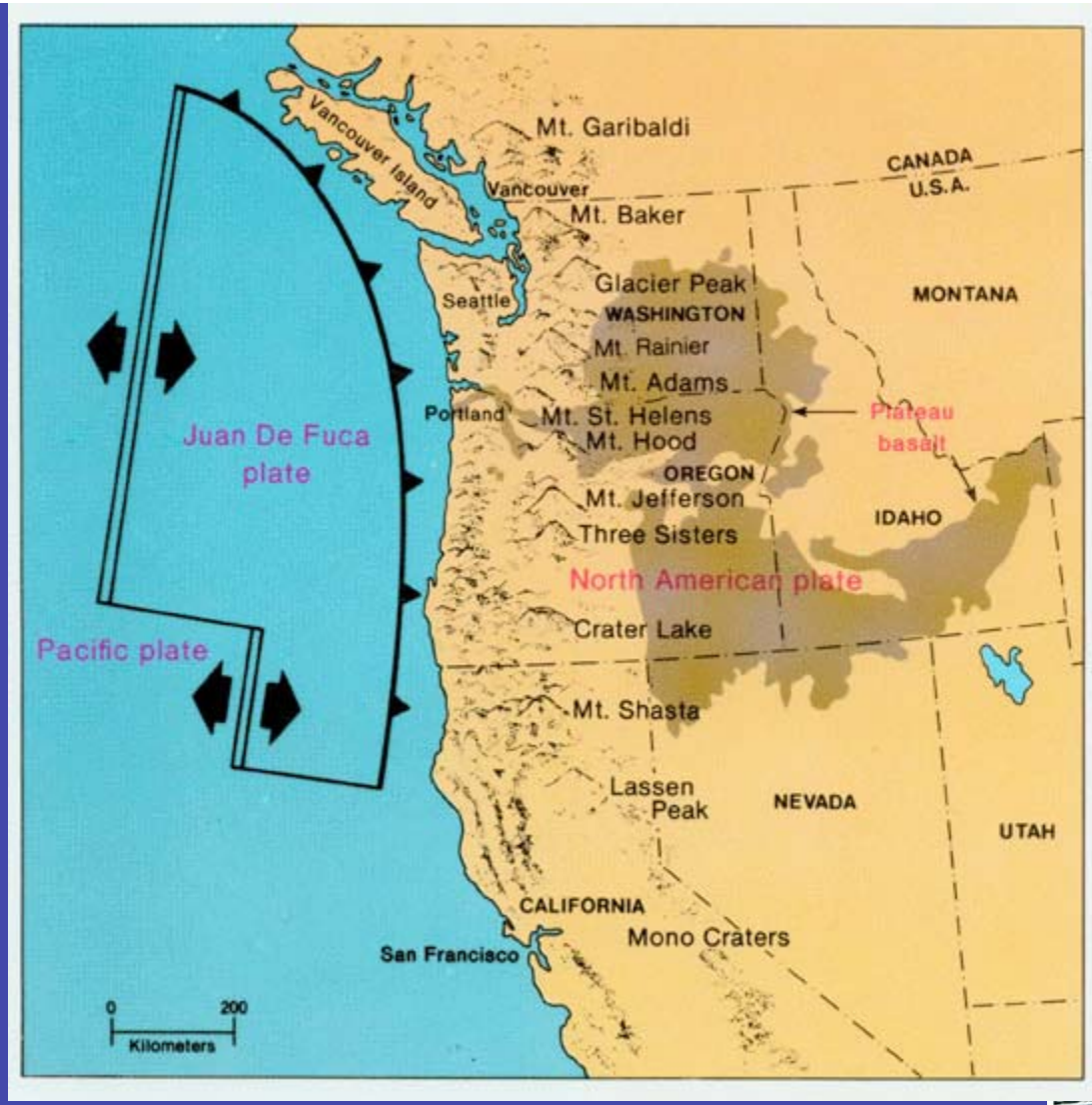








Tambora, 1815







St. Helens, 1980



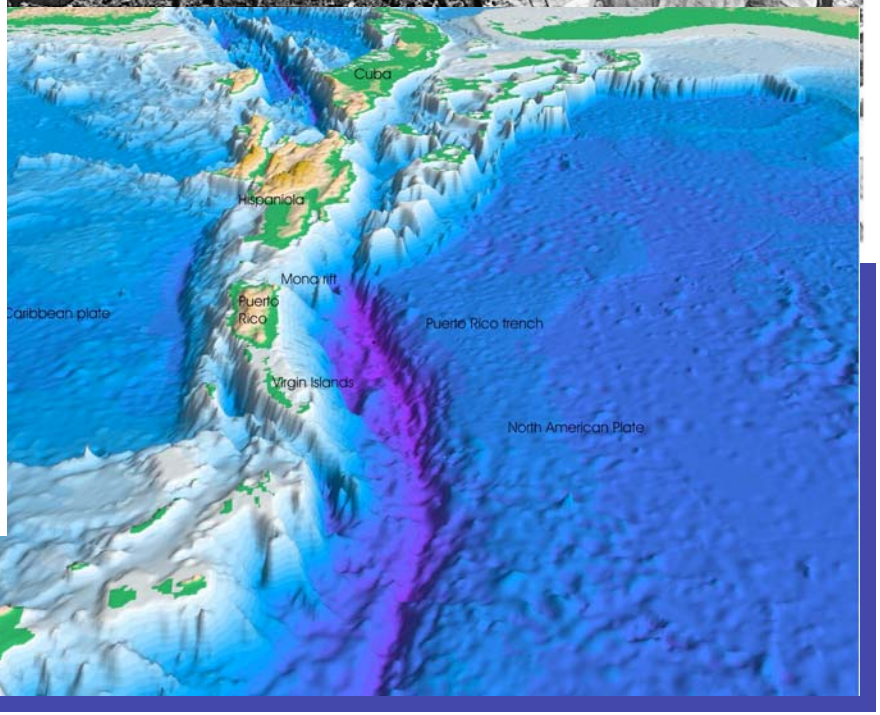


West Indies – Caribbean Vicinity



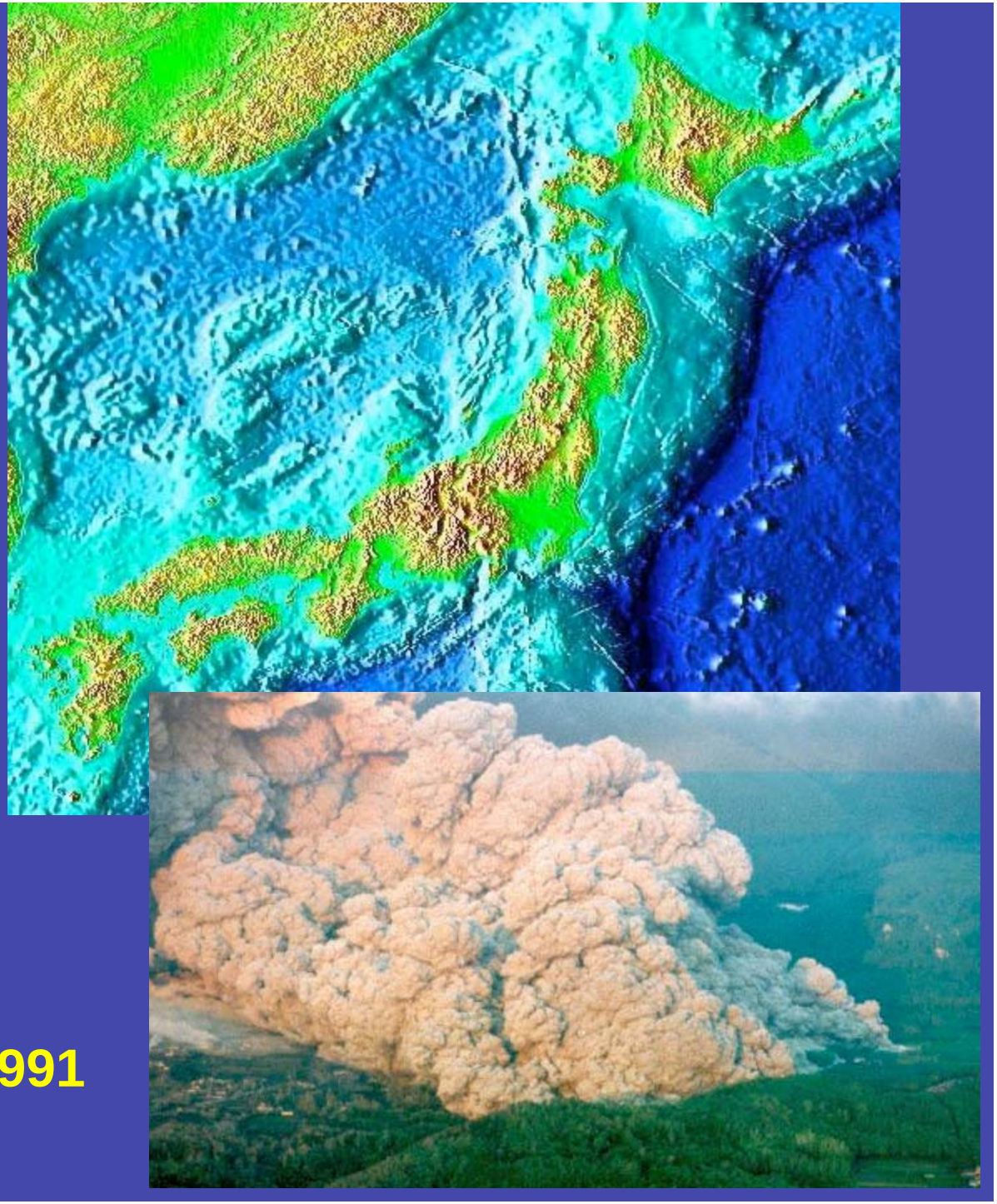
USGS

Topinka, USGS/CVO, 2000, Using PARC Map Viewer Basemap, 1997



Mt. Pelée, 1902


Major Volcanoes of Japan
0 200 400 km
0 200 400 mi
RUSSIA
Administered by RUSSIA, claimed by JAPAN
CHINA
HOKKAIDO
Sapporo
Akan
Tokachi
Komaga-take
Shikotsu
Iwate
Usu
NORTH KOREA
Sea of Japan
Akita
JAPAN
HONSHU
Azuma
Bandai
SOUTH KOREA
Asama
TOKYO
North Pacific Ocean
Fuji
Hakone
Kita-Kyushu
Kobe
Kyoto
Osaka
Oshima
Miyake-jima
KYUSHU
Aso
Hachijo-jima
Unzen
Kirishima
Sakura-jima
East China Sea
Kikai (Satsuma-Iwo-jima)
Tori-shima
Kuchinoerabu-jima
Suwanose-jima
Okinawa-Tori-shima
RYUKYU ISLANDS
Iwo-jima
Shin-Iwo-jima
VOLCANO ISLANDS
Philippine Sea
Asuncion
MARIANAS ISLANDS
(Political Commonwealth with United States)
Pagan
USGS
Topinka, USGS/CVO, 1996; basemap modified from: CIA map, 1997; volcanoes from: Simkin & Siebert, 1994



Unzen, 1991

Stromboli

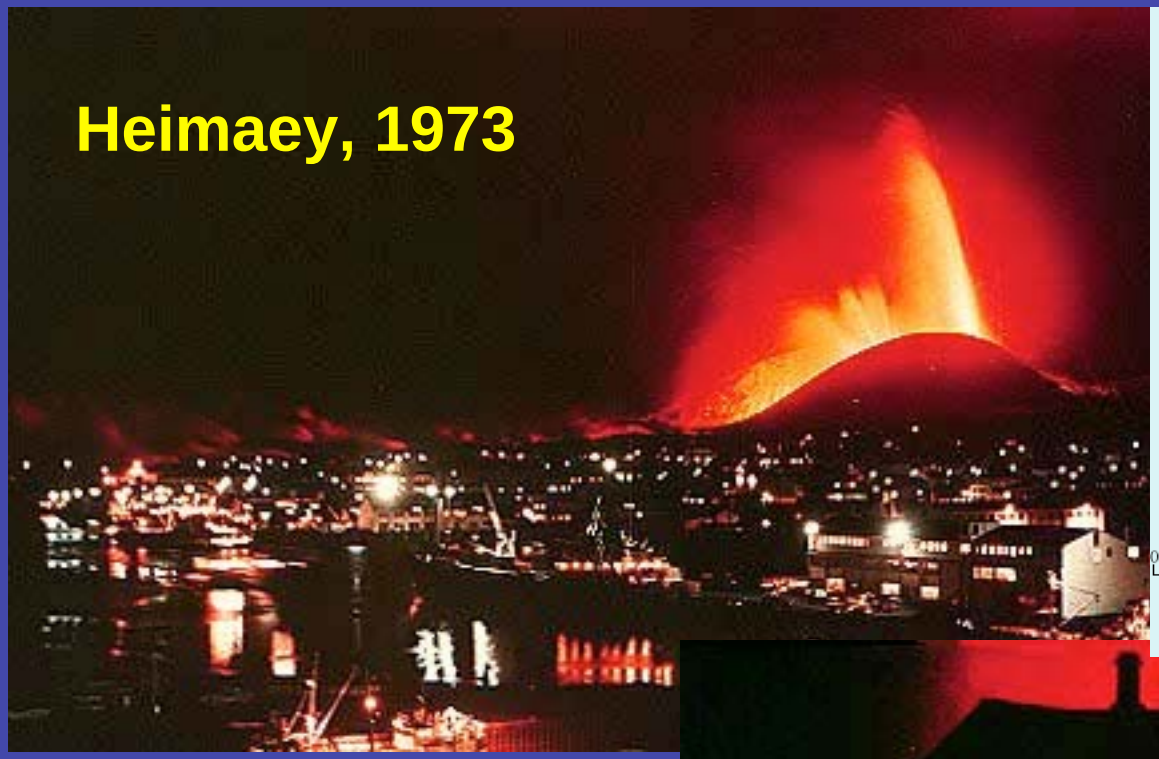


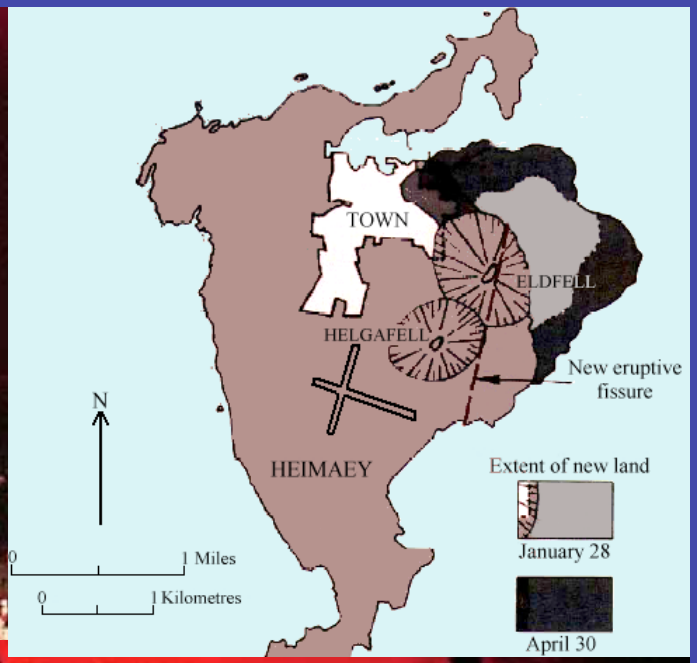

SWITZ.
AUS.
HUNGARY
SLO.
CROATIA
Mont Blanc
Courmayeur
FR.
Po
BOS.
& HER.
SER.
&
MONT.
MONACO
Larderello
Vulcini
Corsica
(FR.)
Adriatic
Sea
ROME
Monte Nuovo
Vesuvius
ALB.
Ischia
Tyrrhenian
Sea
Ionian Sea
Lipari
Stromboli
Vulcanello
Vulcano
Mediterranean Sea
Sicily
Etna
Isola
Ferdinandea
Pantelleria
ALG.
TUNISA
MALTA
0 100 200 km
0 100 200 mi

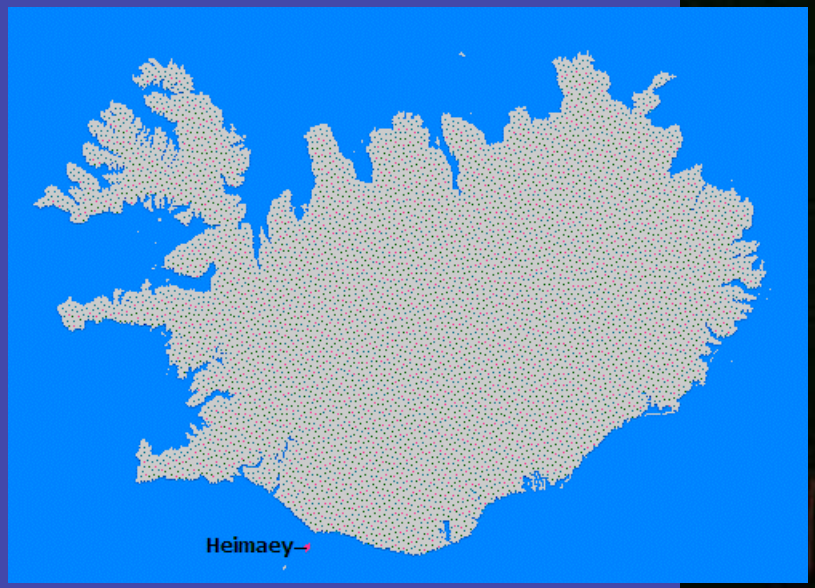

NORTH
0 5 10 20
Kilometres
Tyrrhenian Sea
Stromboli
Basiluzzo
Panarea
Salina
Alicudi
Filicudi
Lipari
Vulcano
Milazzo
SICILY
ITALY
Adriatic Sea
Rome
Naples
Tyrrhenian
Sea
Palermo



Heimaey, 1973





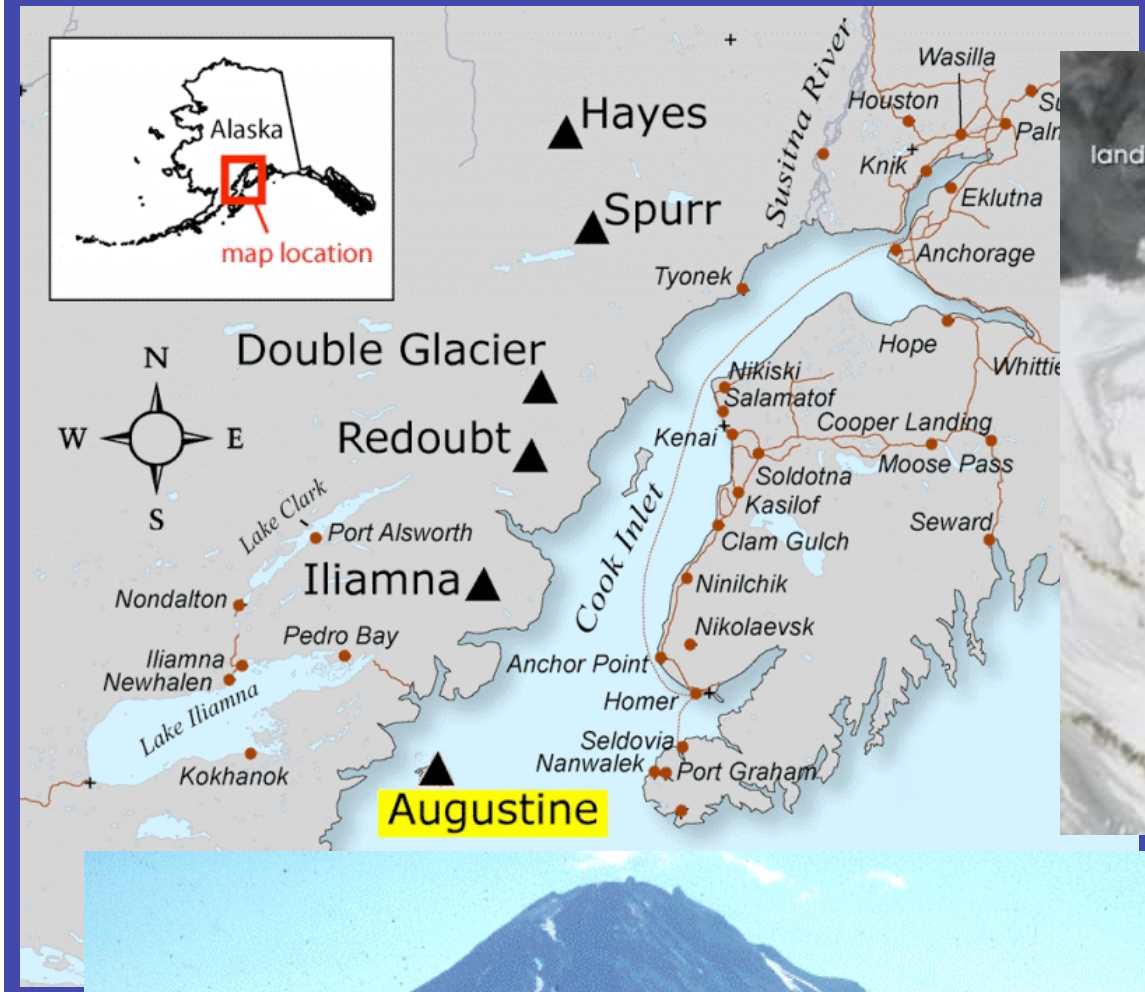


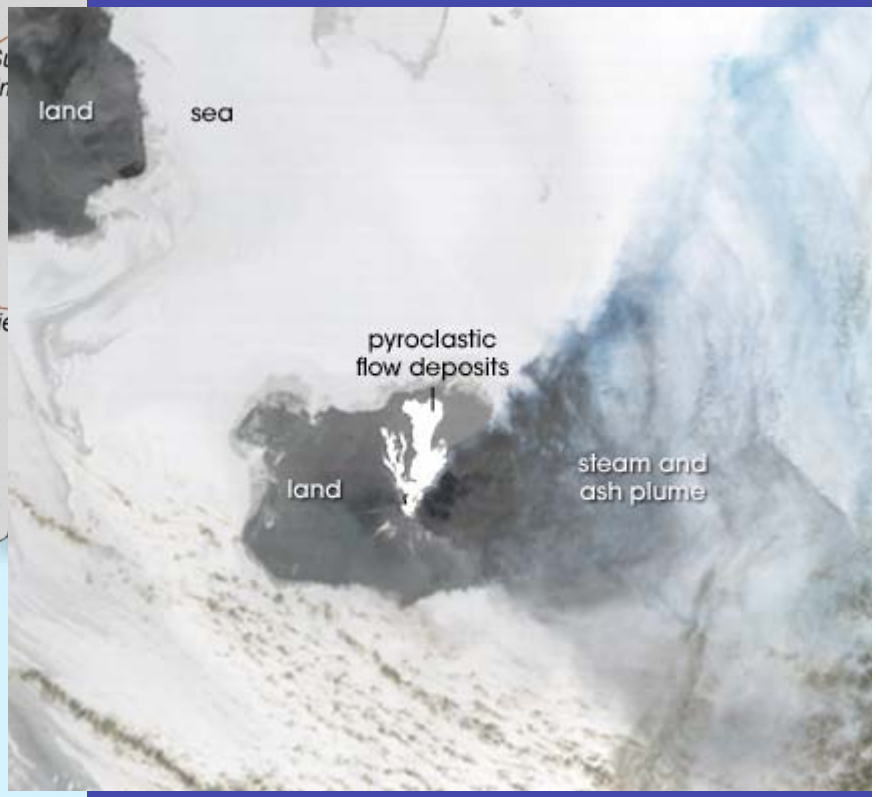


Mt. Ol Doinyo Lengai, Tanzania





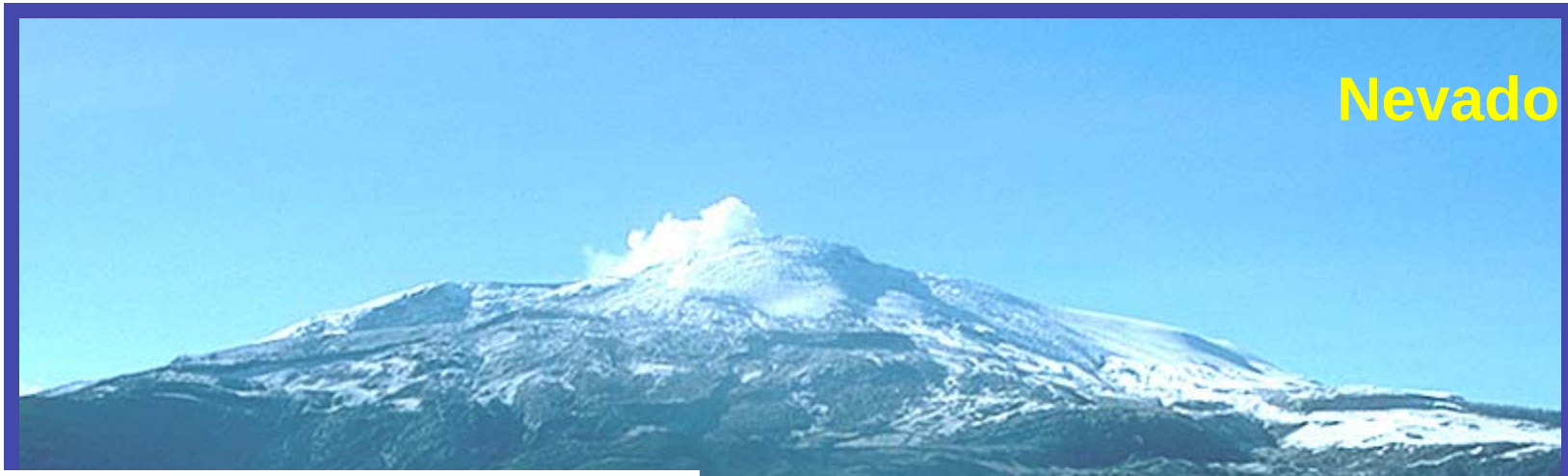

Alaska
map location
N
W
E
S
Hayes
Spurr
Double Glacier
Redoubt
Iliamna
Augustine
Susitna River
Wasilla
Houston
Knik
Eklutna
Anchorage
Tyonek
Hope
Nikiski
Salamatof
Cooper Landing
Kenai
Soldotna
Moose Pass
Kasilof
Seward
Clam Gulch
Ninilchik
Nikolaevsk
Anchor Point
Homer
Seldovia
Nanwalek
Port Graham
Cook Inlet
Lake Clark
Port Alsworth
Nondalton
Pedro Bay
Iliamna
Newhalen
Lake Iliamna
Kokhanok


land
sea
pyroclastic
flow deposits
land
steam and
ash plume



Augustine

Nevado Del Ruiz 1985





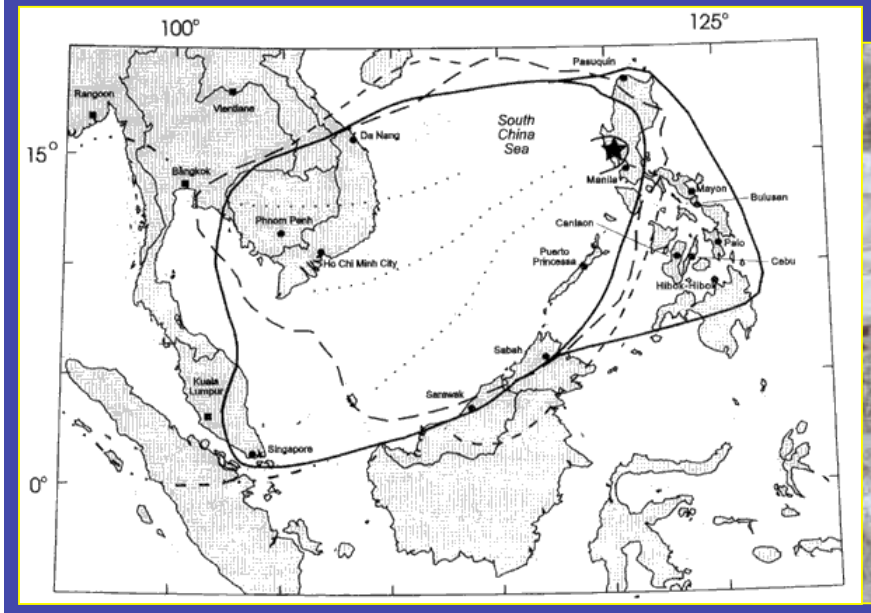


Pinatubo 1991













Locations of world's volcanoes

Most are related to what kind of boundary?



Locations of world's EXPLOSIVE volcanoes

Volcanic explosivity index (VEI)

VEI	Classification	Description	Plume	Ejecta volume	Frequency	Example	Occurrence
0	Hawaiian	Non-explosive	< 100 m	> 1000 m^3	Daily	Mauna Loa	--
1	Hawaiian/ Strombolian	Gentle	100-1000 m	>10,000 m^3	Daily	Kilauea	--
2	Strombolian/ Vulcanian	Explosive	1-5 km	>1,000,000 m^3	Weekly	Mt. Hood	3,477
3	Vulcanian/ Pelean	Severe	3-15 km	>10,000,000 m^3	Yearly	Mt. Vesuvius	868
5	Plinian	Paroxysmal	>25 km	>1 km^3	≥ 50 yrs	St. Helens	84
6	Plinian/ Ultra-Plinian	Colossal	>25 km	>10 km^3	≥ 100 yrs	Mt. Pinatubo	39
7	Plinian/ Ultra-Plinian	Super-colossal	>25 km	>100 km^3	≥ 1000 yrs	Santorini	4
8	Ultra-Plinian	Mega-colossal	>25 km	>1000 km^3	≥ 10,000 yrs	Yellowstone	--

Paroxysm: a spasm or fit; a convulsion