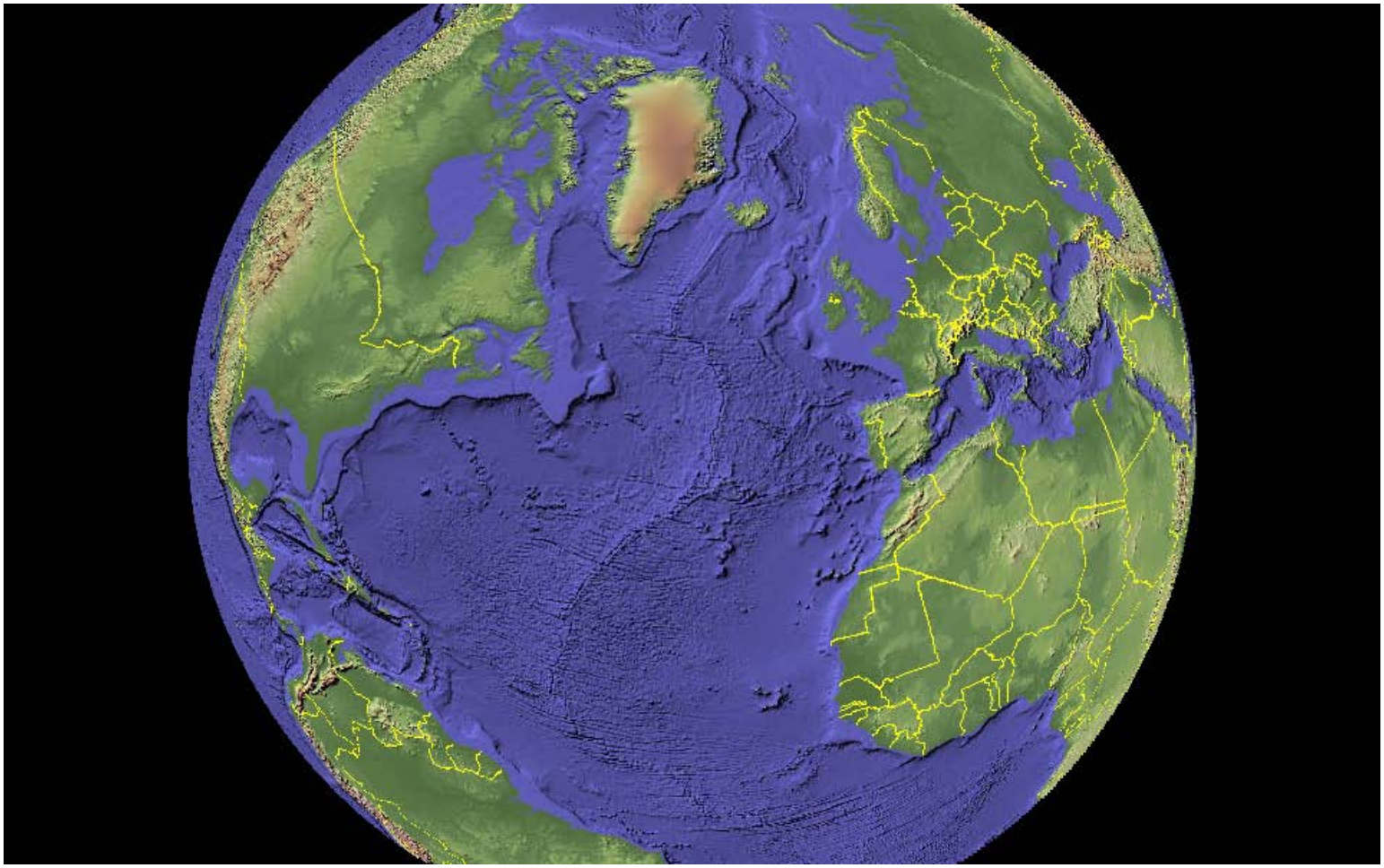
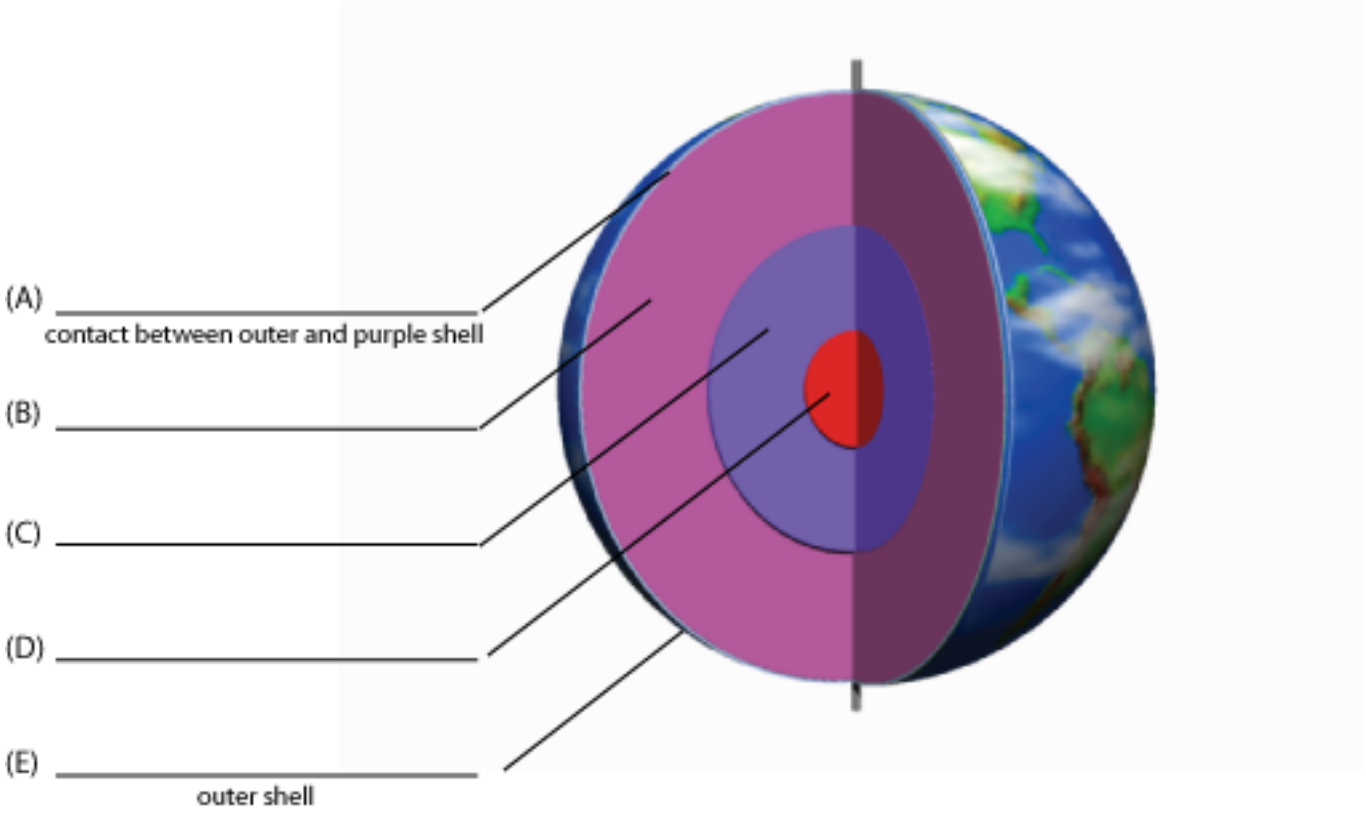
Geology 100
Notes on Planet Earth version 3.0

Review – Exam 1

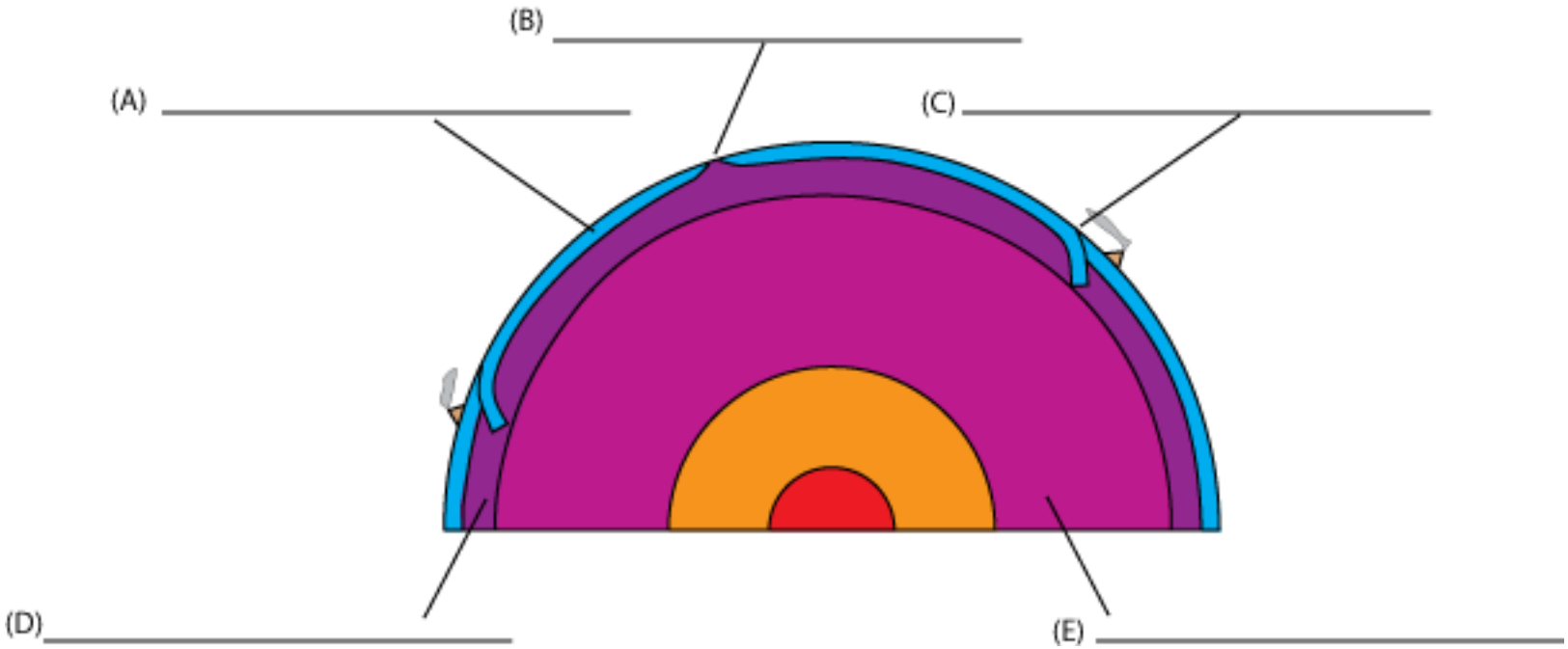
Chapter 1 – Plate Tectonics



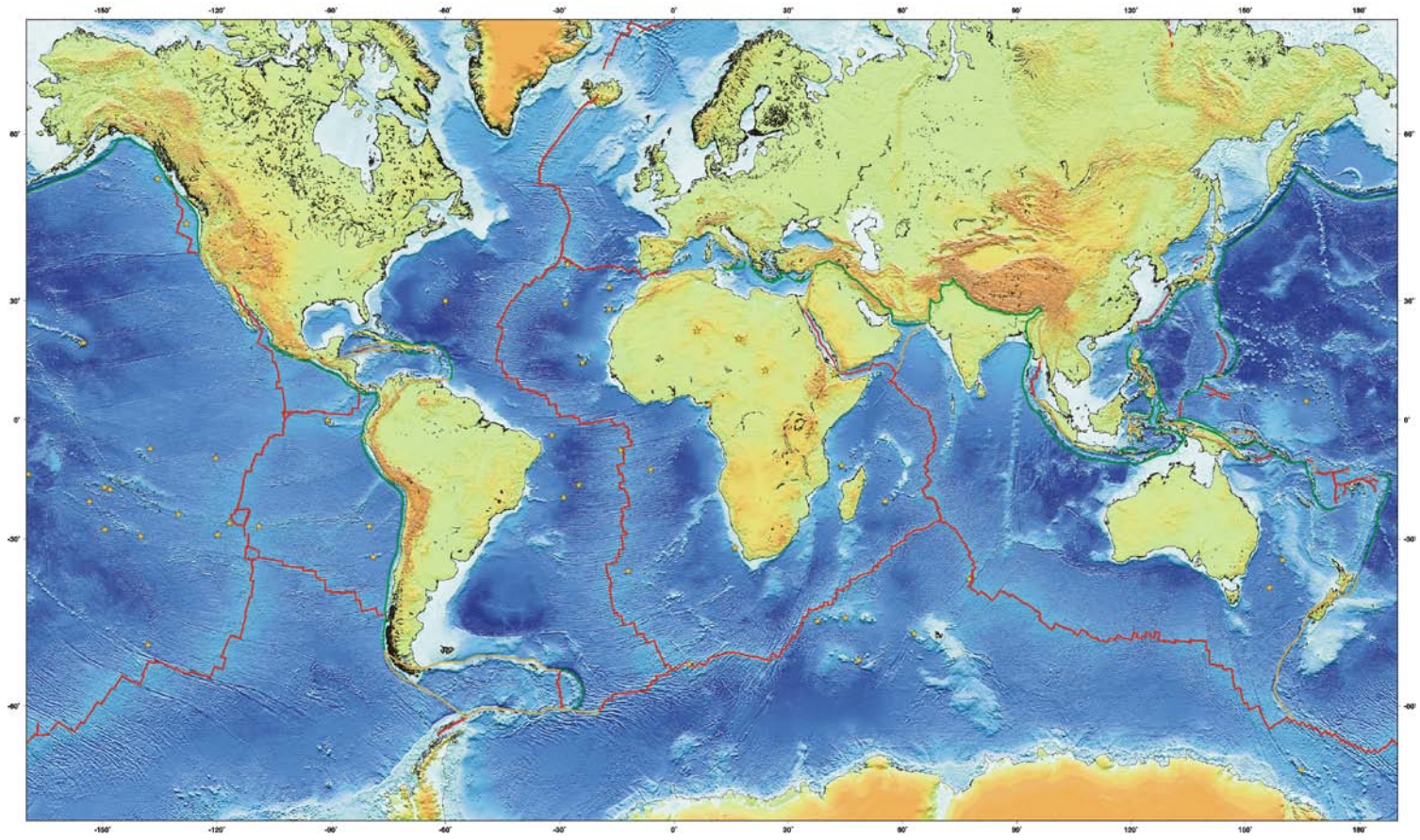
Internal Structure of Planet Earth



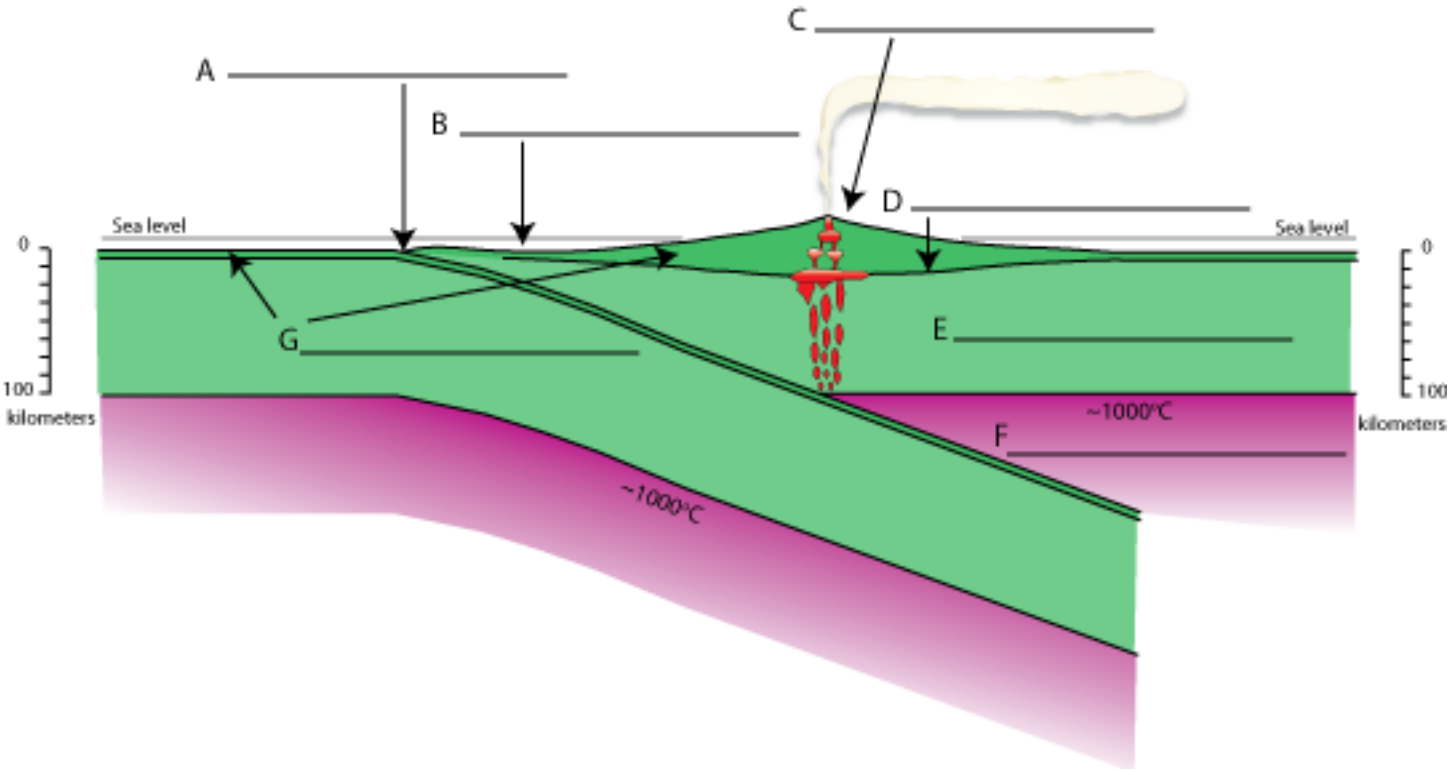
Mechanical Layers



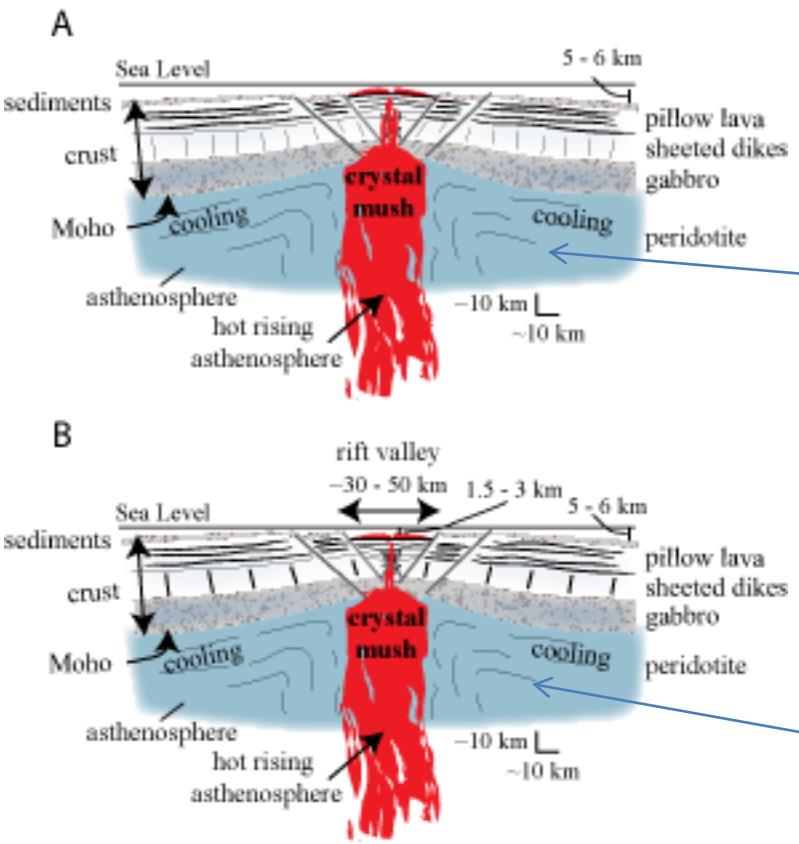
Seven Major Plates

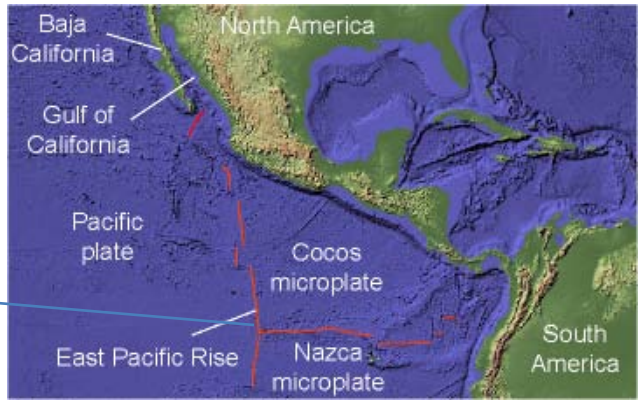


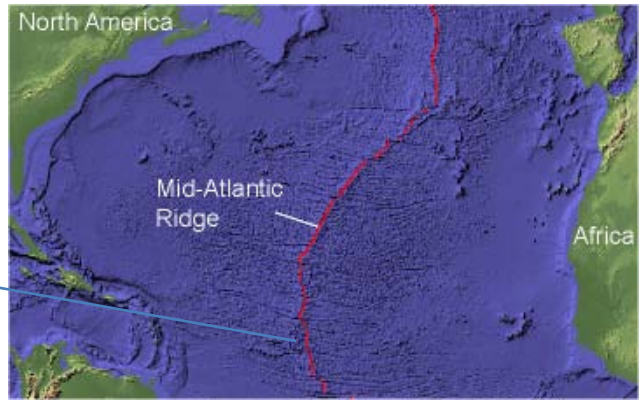
Convergent Margin



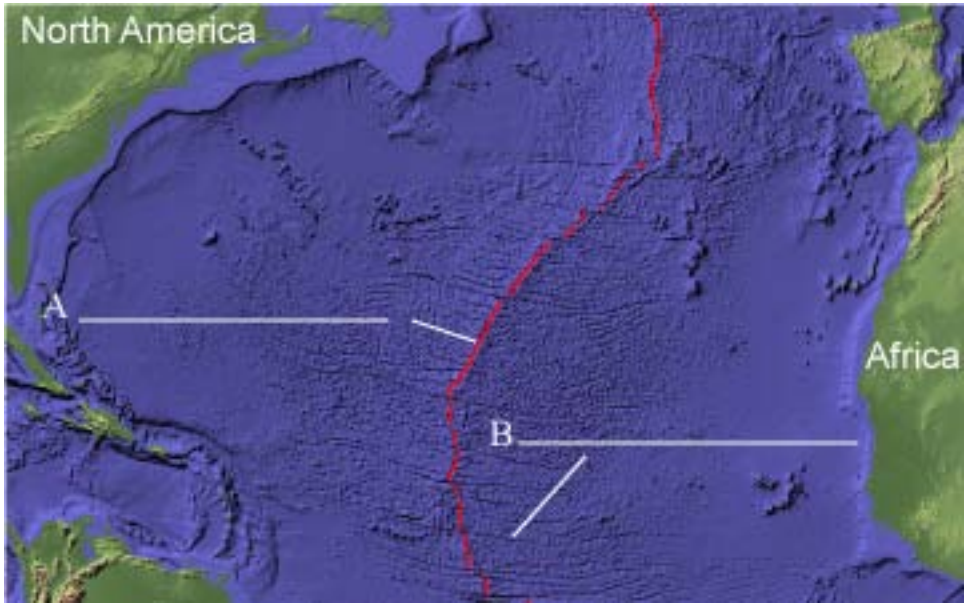
Divergent Margin



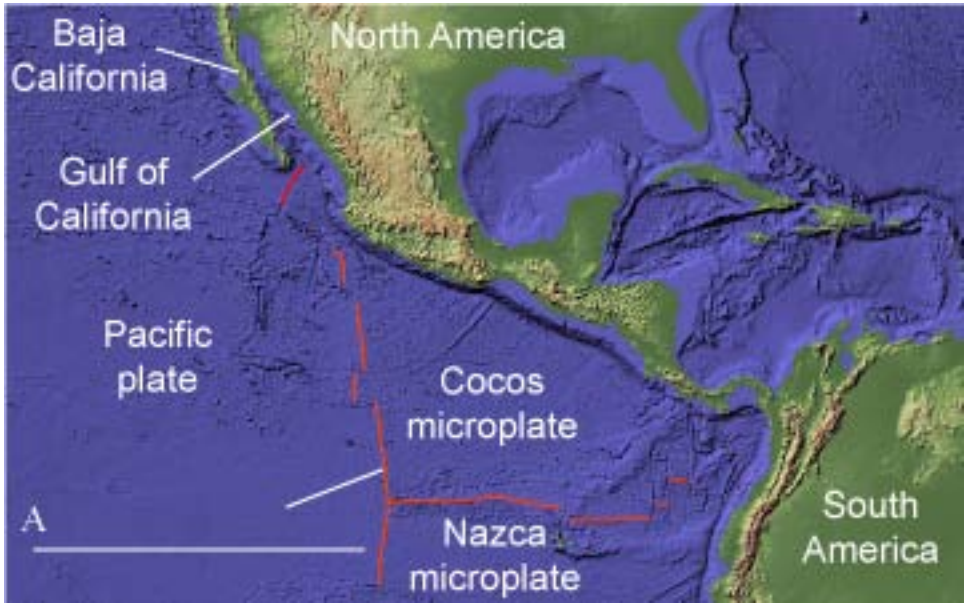




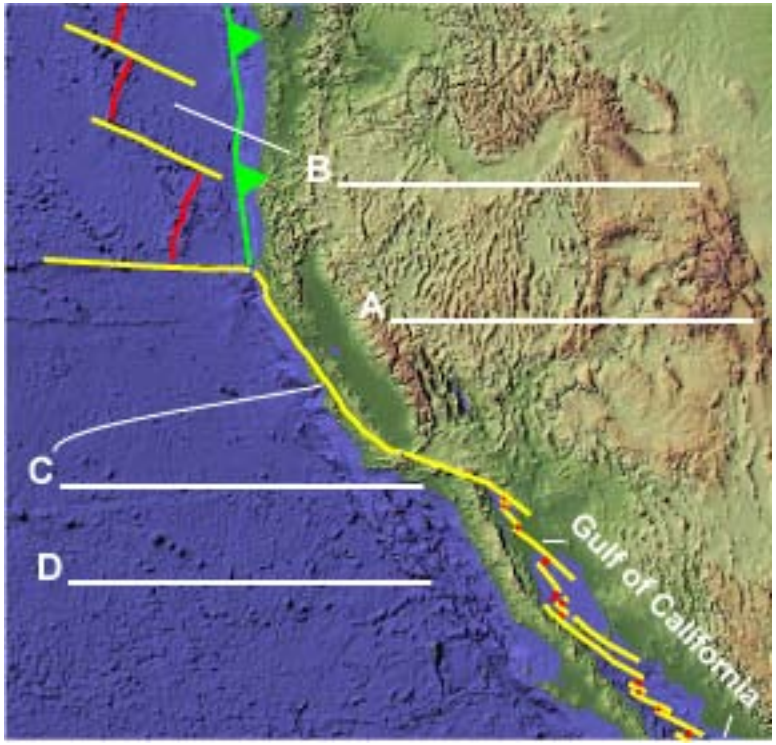
The Middle-Atlantic Ridge



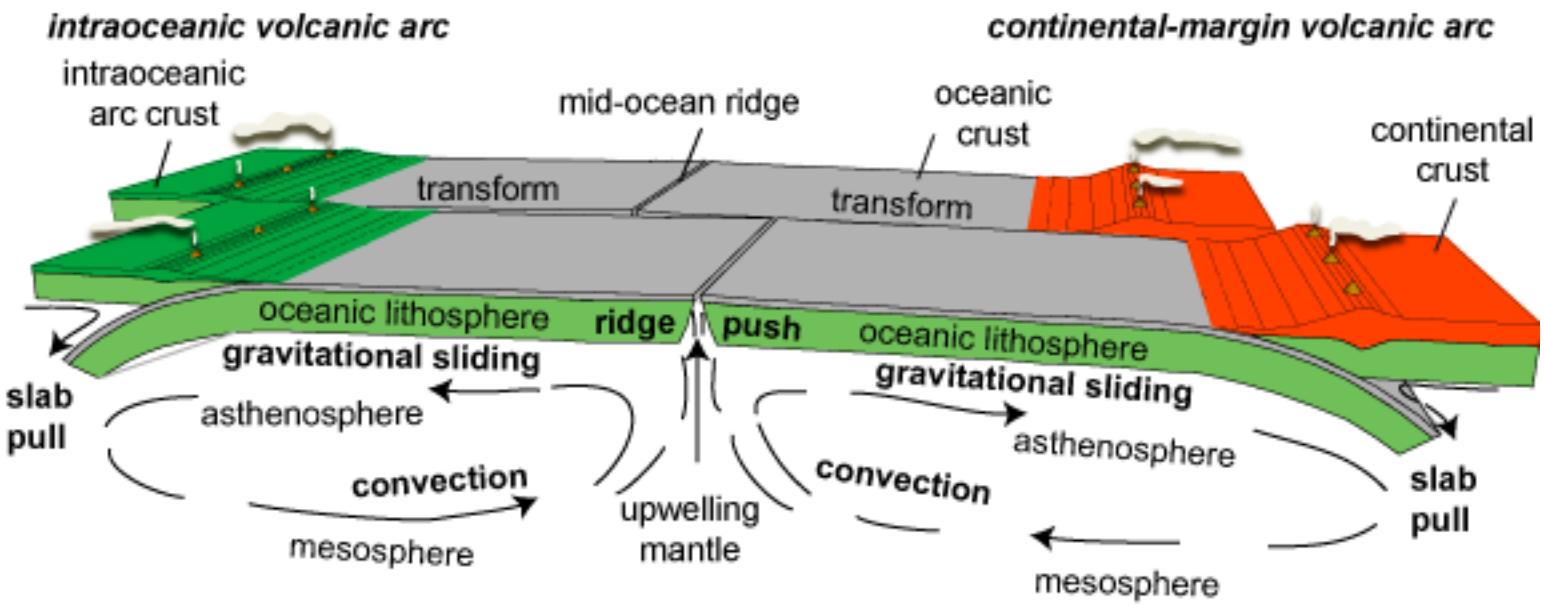
East Pacific Rise



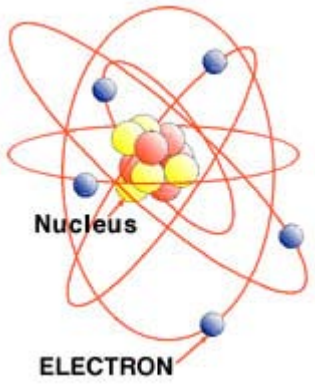
Transform (Conservative) Boundaries



The Driving Forces of Plate Motion



Atoms



Common Oxidation States

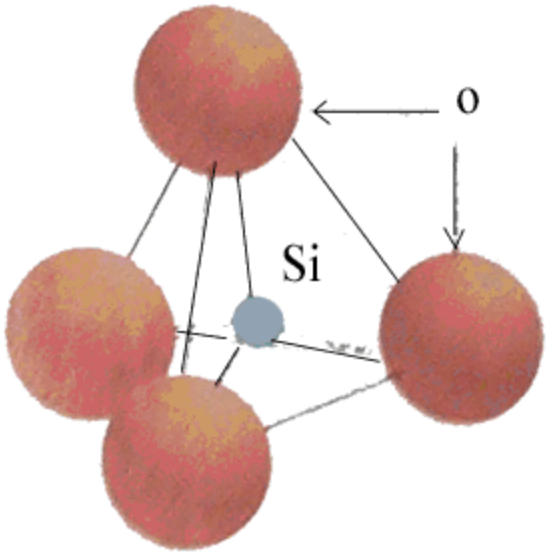
- Si
- Al
- Fe
- Mg
- Ca
- Na
- K
- O
- Cl

Two Major Groups of Minerals

Can you name the two major groups of minerals?

How are they distinguished?

Can you name a few common non-silicate minerals and a few common silicate minerals?



Silicate Minerals

- Quartz and Feldspar
- Biotite and Muscovite
- Amphiboles, e.g., Hornblende
- Pyroxenes
- Olivines

Mineral Formula

- $CaCO_3$
- SiO_2
- $NaCl$
- Fe_2O_3
- $KAlSi_3O_8$
- $(Mg, Fe)_2SiO_4$

Luster

Galena
Pyrite
Gold
Halite
Silver
Gypsum
Calcite
Hematite
Quartz
Diamond

Streak and other unique properties

Galena

Pyrite

Gold

Silver

Galena

Halite

Gypsum

Calcite

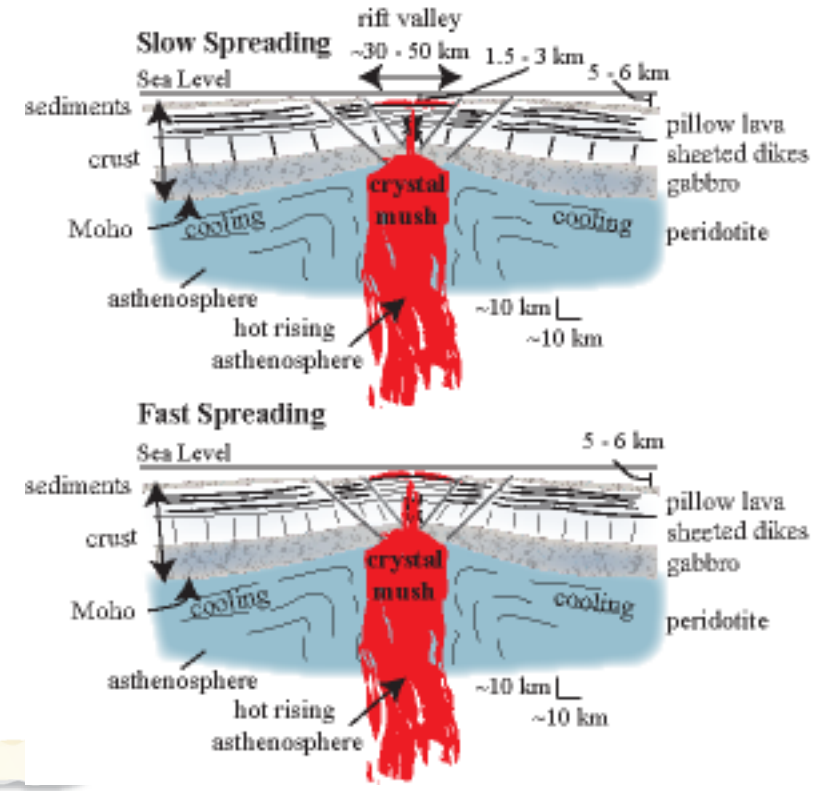
Hematite

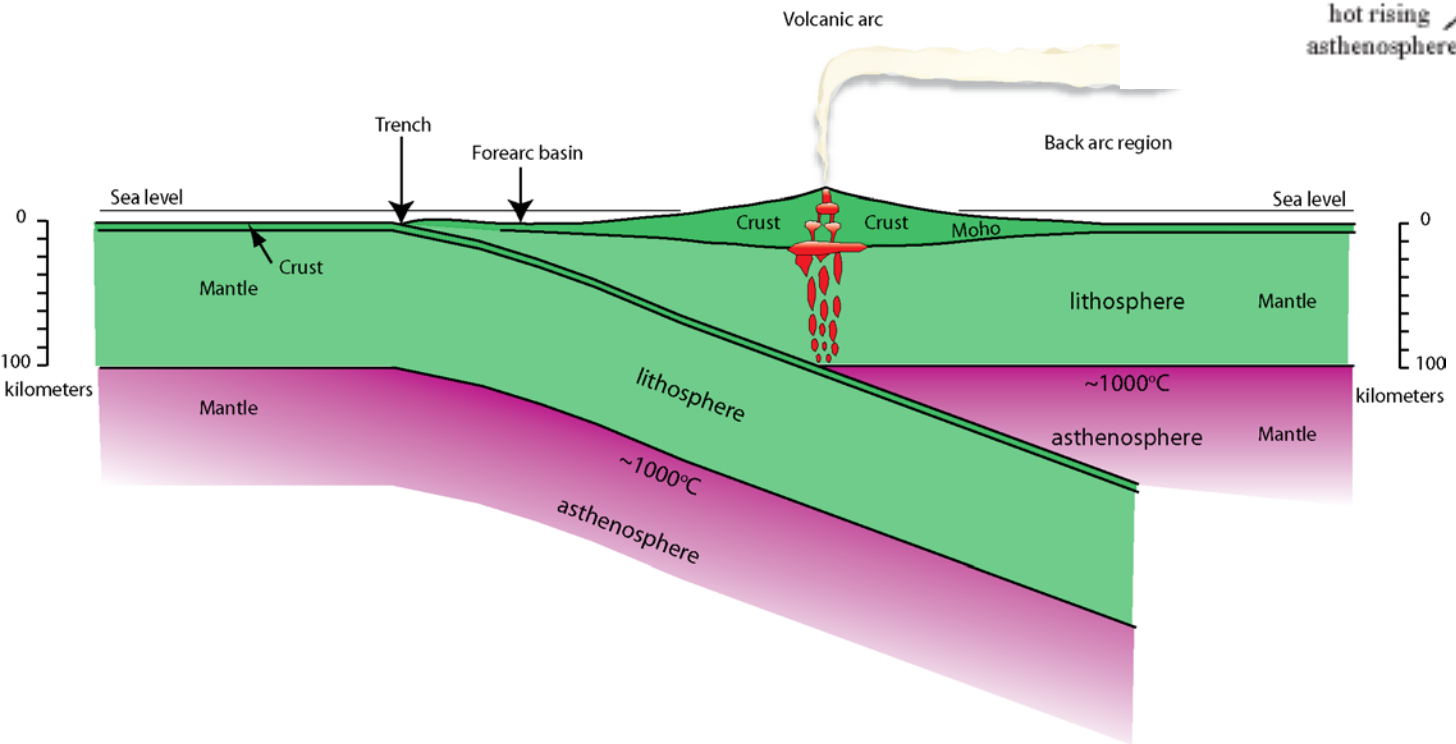
Conchoidal fracture

Fiedrich Mohs

- Diamond, corundum, topaz, quartz, orthoclase, apatite, fluorite, calcite, gypsum, talc

Igneous Rocks





Texture

Porphyritic Texture

Compositional Equivalents

- Gabbro, Diorite, Granite
- Rhyolite, Andesite, Basalt

Compositions base on SiO_2

- Ultramafic
- Mafic
- Intermediate
- Silicic

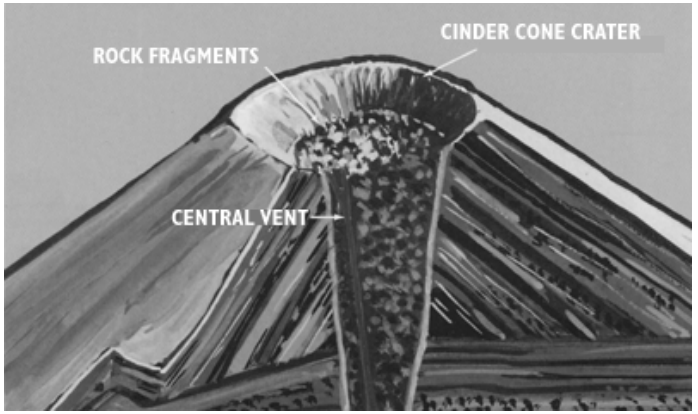
Tephra/Pyroclasts

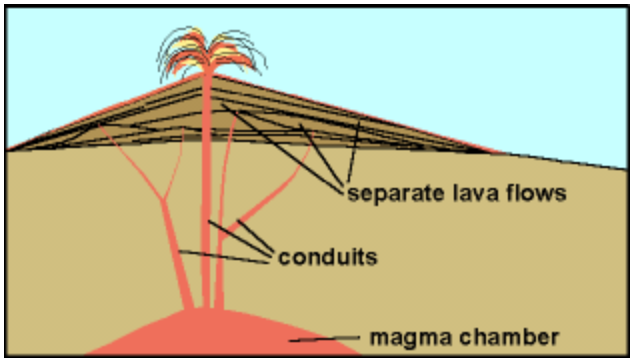
Pyroclastic Rocks

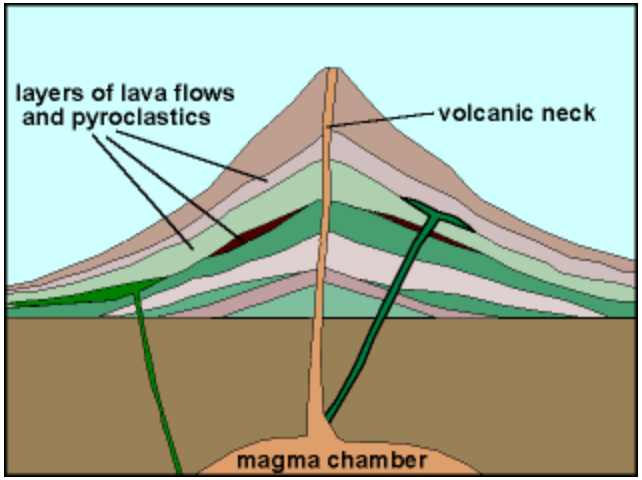
- Lapilli tuff
- Tuff
- Scoria
- Volcanic breccia
- Agglomerate

Volcanoes

- Strato or composite
- Shield
- Cinder cones





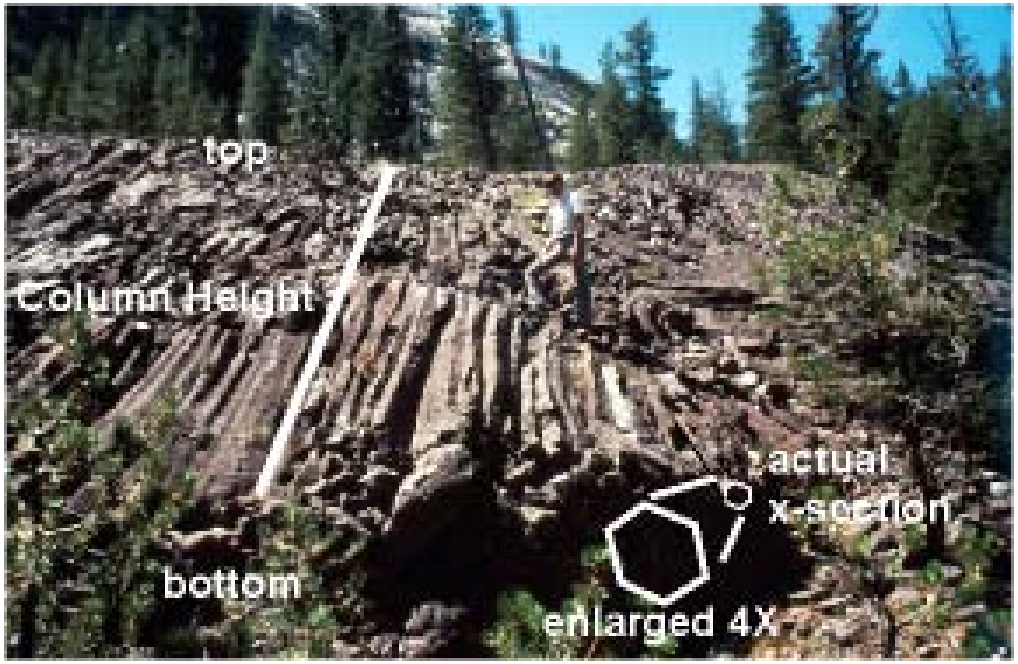


Caldera versus crater

Caldera versus crater

Subaerial Lava Flows

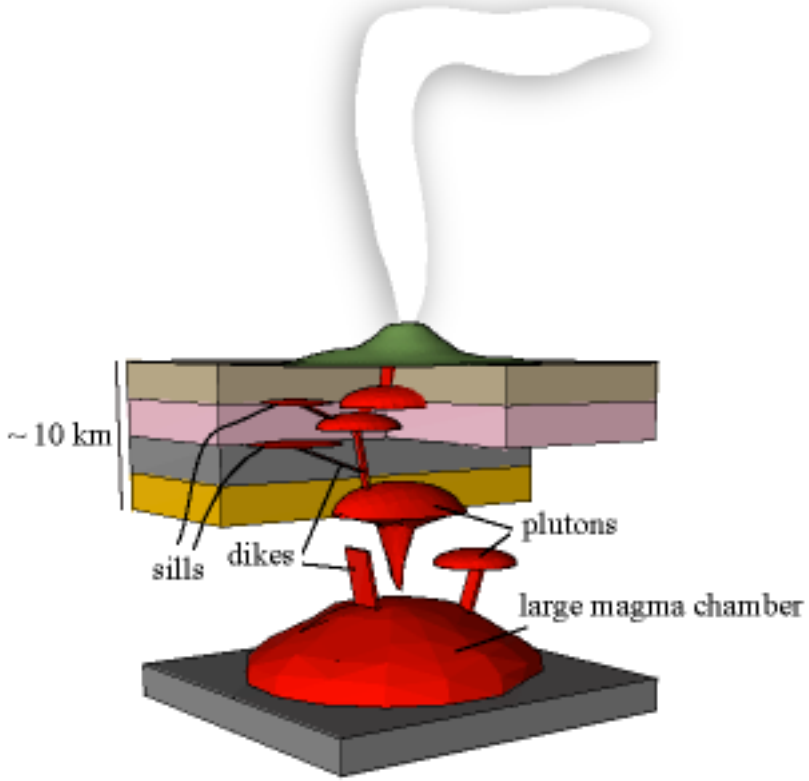
Six-sided joints are called ?



Pillow Lava

Pyroclastic Eruptions

Plutons, dikes, and sills



How does magma form?

- Dehydration reactions and water-induced melting
- Pressure-release melting

Crystal Settling & Bowens Reaction Series