

AP Environmental Science

Earth Systems- Part 5

Rock Cycle

- Rock- naturally occurring solid mixture of minerals
- Rock Types
 - **Igneous Rock** -" Born of Fire", formed from magma that has cooled.
 - **Intrusive/ plutonic**—formed inside the earth's crust, typically large grains, can sometimes create formations inside other rock formations called intrusions
 - **Extrusive/ volcanic** – formed on the surface, typically small grained

Volcanic Rocks
Rocas volcánicas
Roches volcaniques

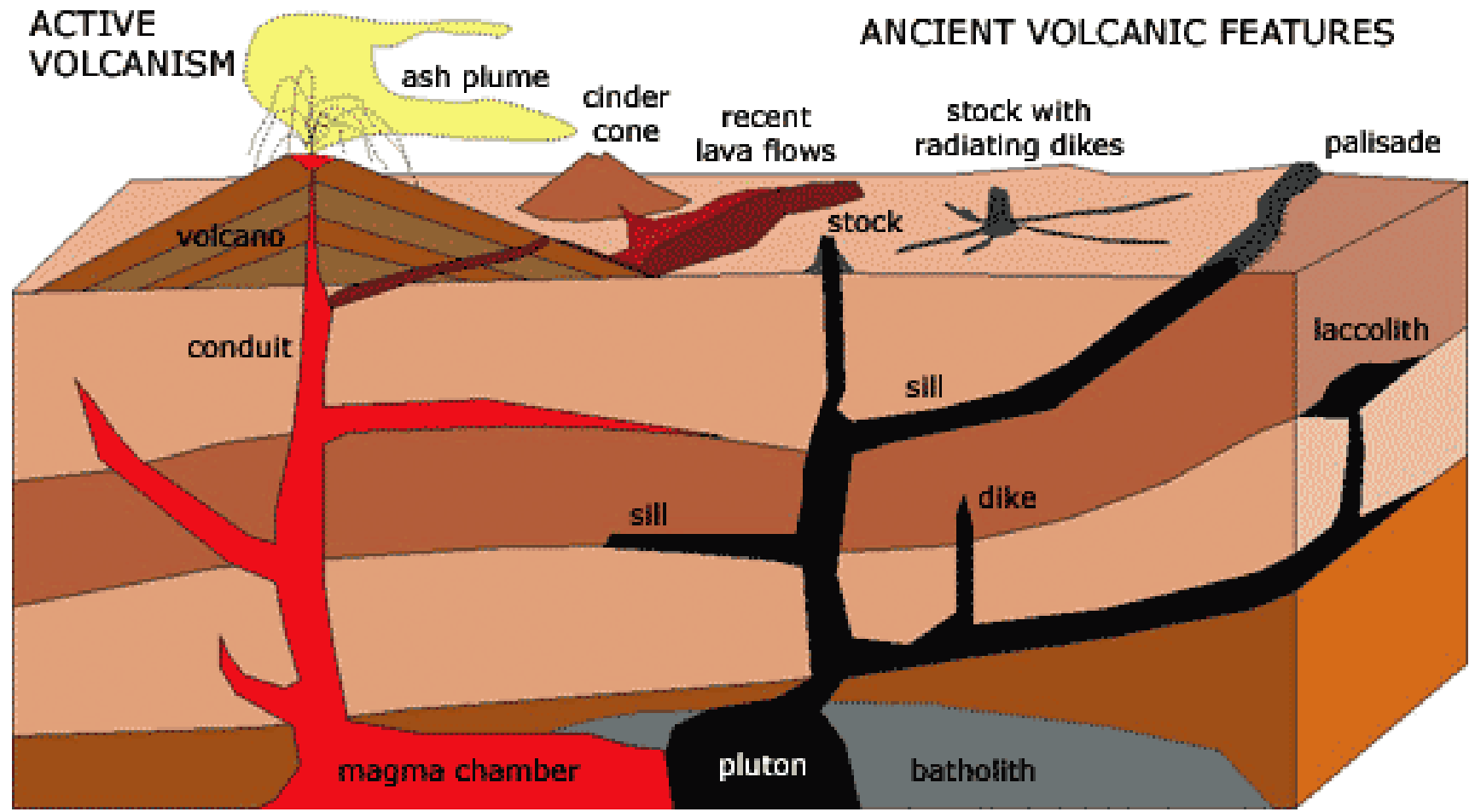


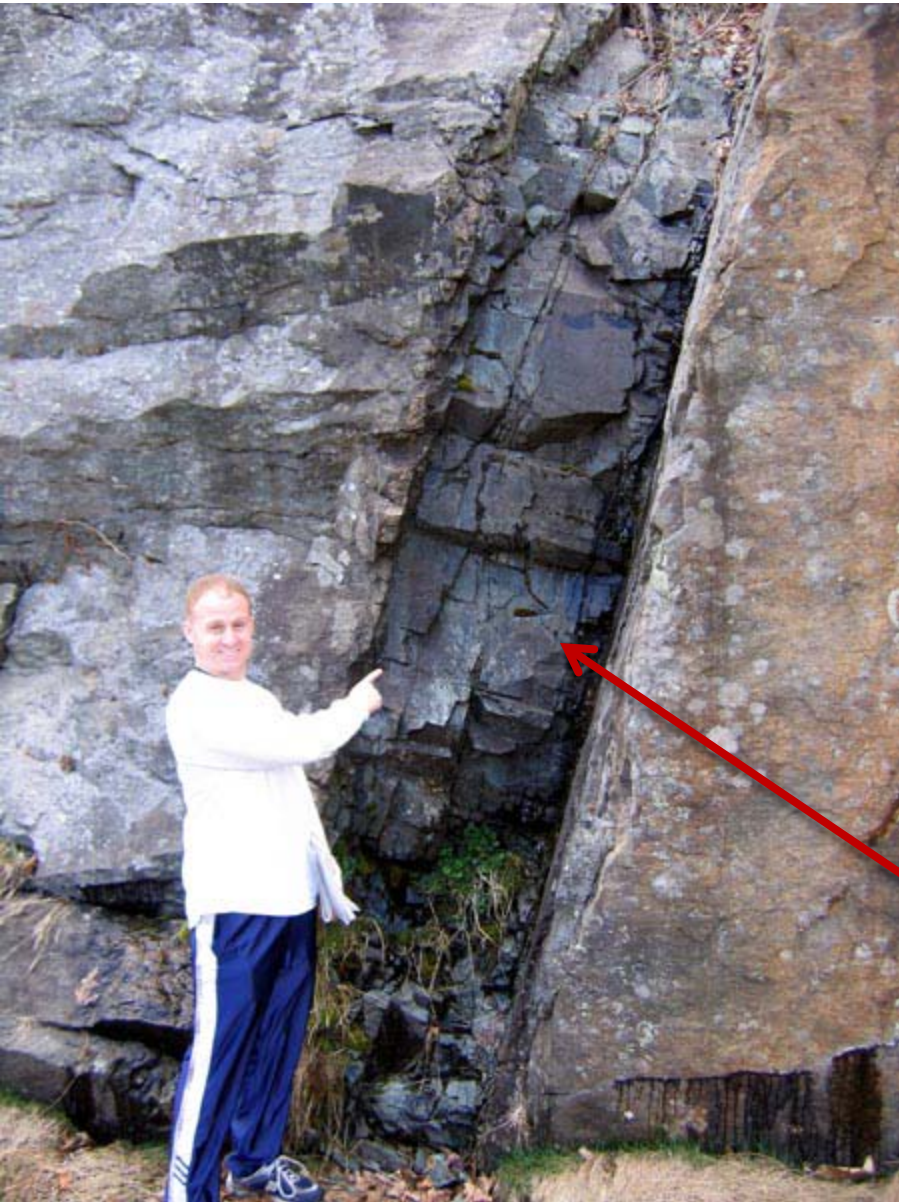
Plutonic Rocks
Rocas plutónicas
Roches plutoniques



**ACTIVE
VOLCANISM**

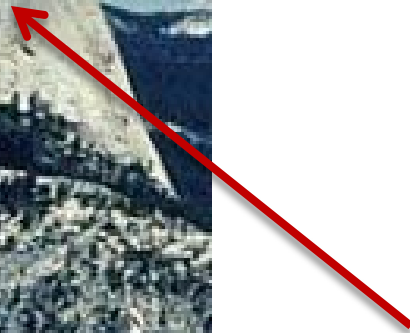
ANCIENT VOLCANIC FEATURES





Dike

Sill



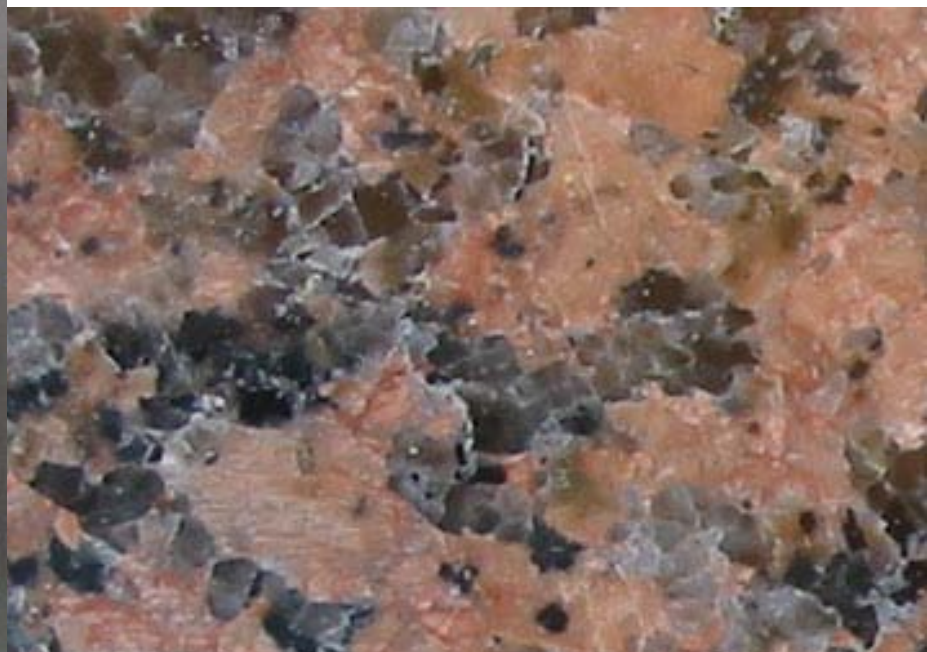
Batholith – Half Dome







© J. Powell 2002



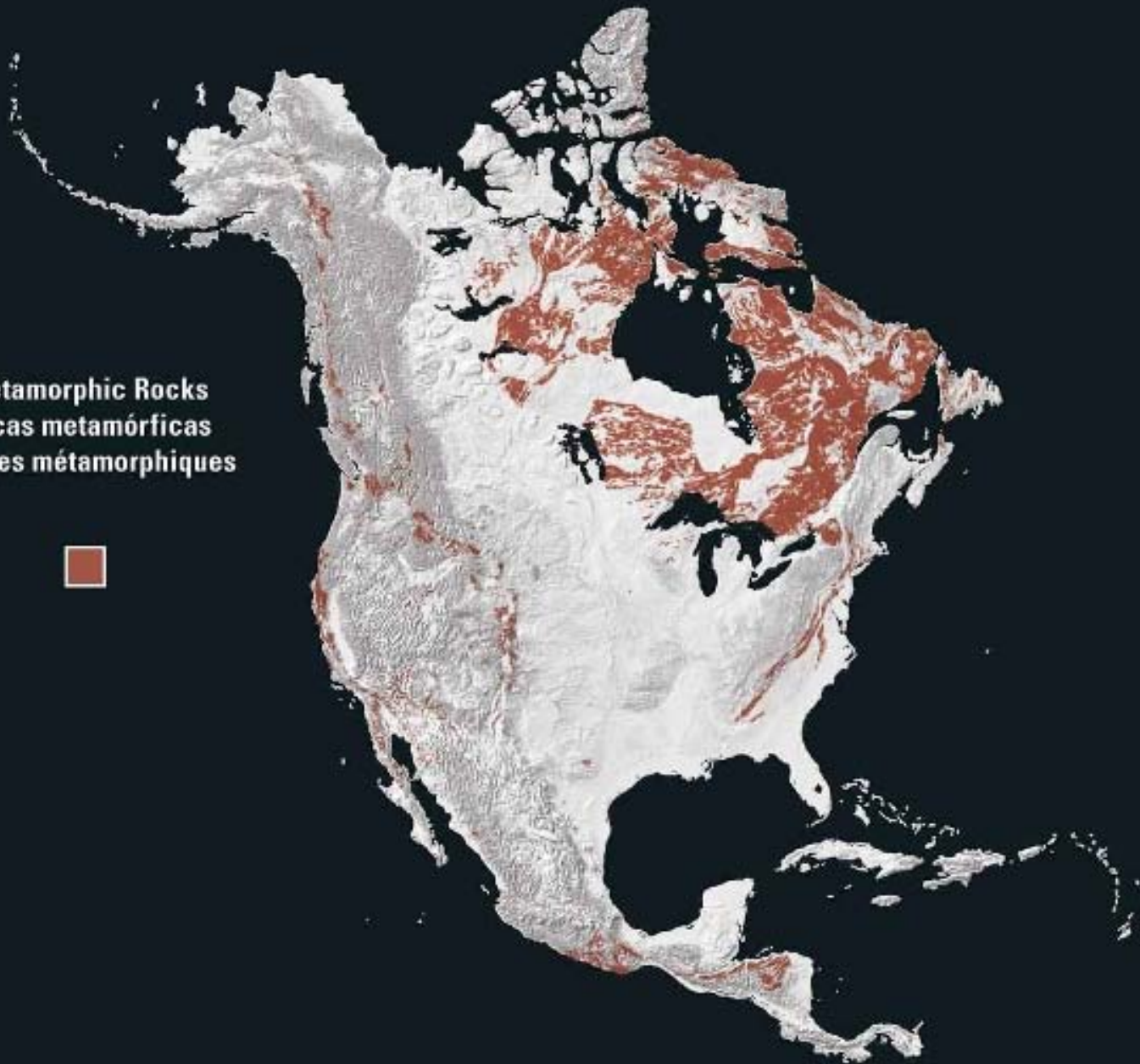


- **Sedimentary Rock** – formed from the lithification of sediments deposited by wind or water, glued together by mineral deposition(usually quartz) in between
- **Metamorphic Rock-** formed from the result of transformation of some preexisting rock type called the protolith, (I,S,M), Rocks are transformed through heat and/ or pressure, can be either regional or contact, either shows foliation or not

Sedimentary Rocks
Rocas sedimentarias
Roches sédimentaires



Metamorphic Rocks
Rocas metamórficas
Roches métamorphiques

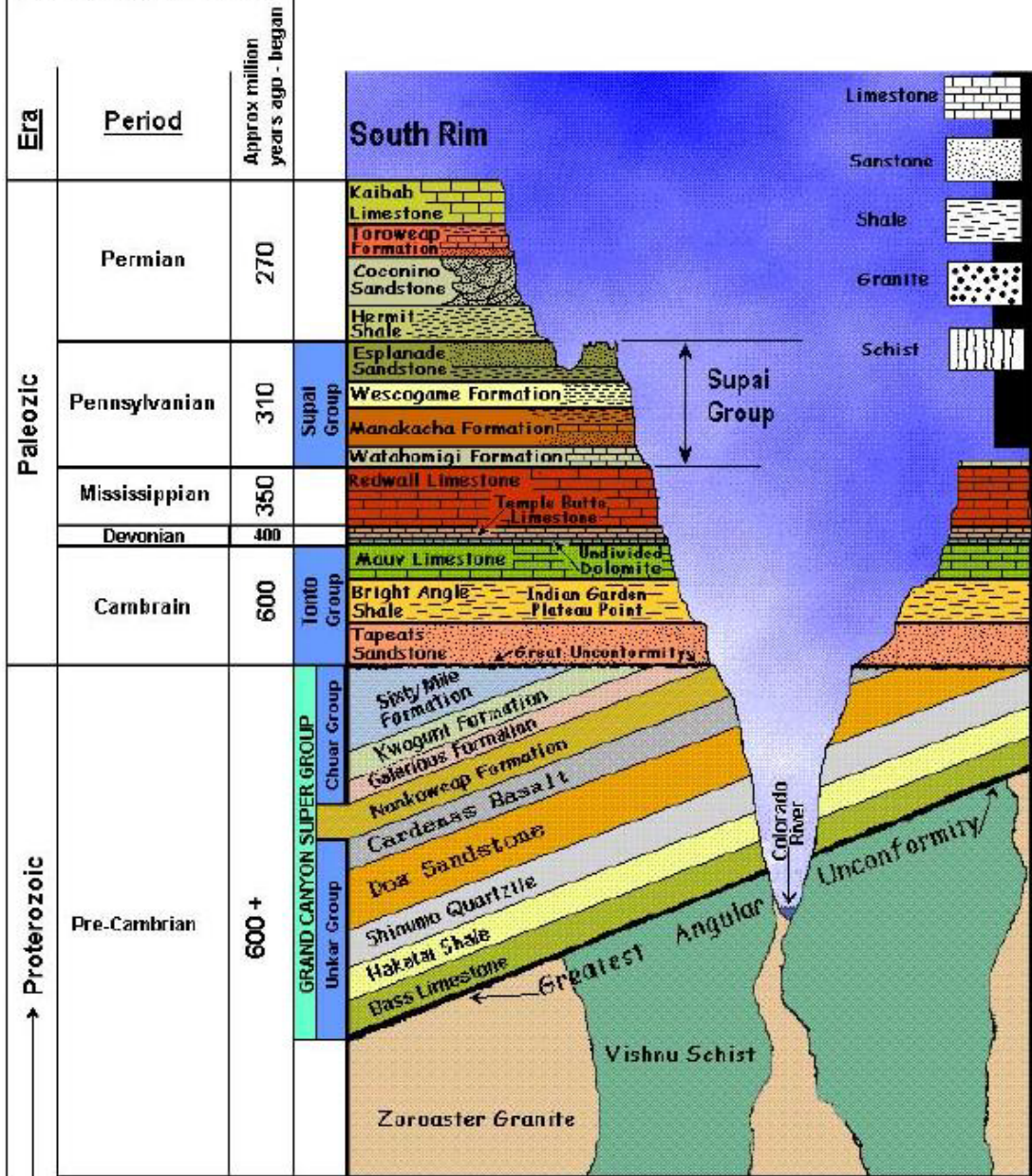








Geologic Time









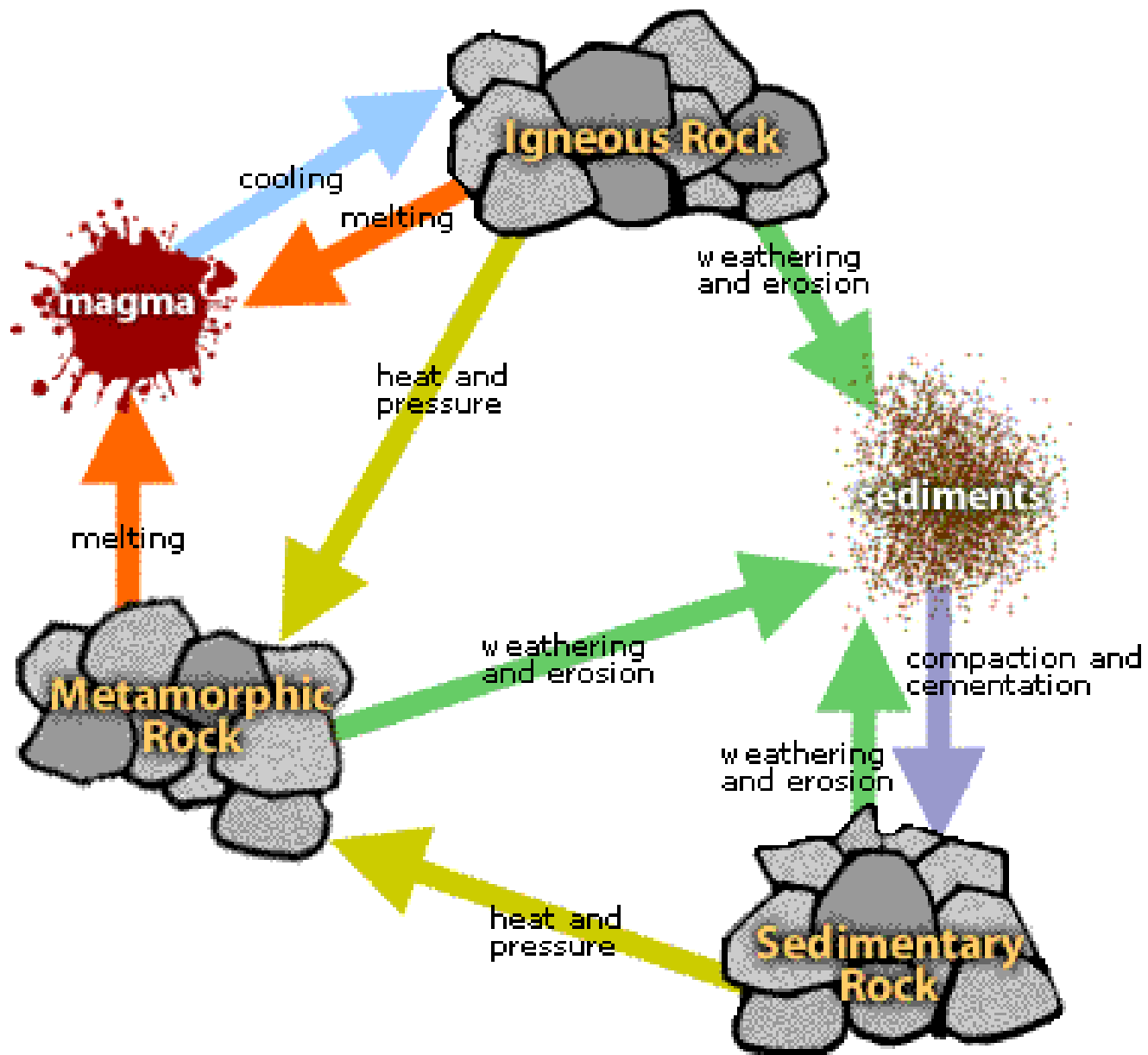












Weathering, Erosion & Deposition

- **Weathering**- is the breakdown of rocks due to the exposure to the atmosphere and weather
- **Erosion**- Erosion is the movement of weathered materials, called sediments, by the process of wind, water, ice, and gravity

• Types of Weathering

▫ Mechanical Weathering

- Physical disintegrating of larger rocks into smaller pieces, the size of silt, sand, gravel and boulders
- Change in size of material, not chemical composition and structure
- Agents of Mechanical Weathering: Freezing and thawing of water "ice wedging", temperature changes, plant root infiltration
- wetter climates experience faster weathering than dry ones

Relative soil particle sizes

GRAVEL



SAND



SILT



CLAY

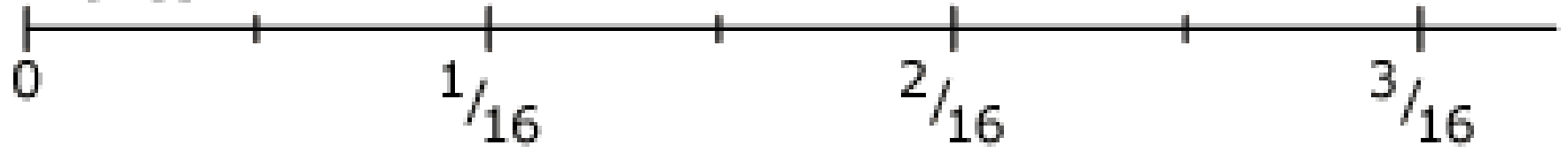


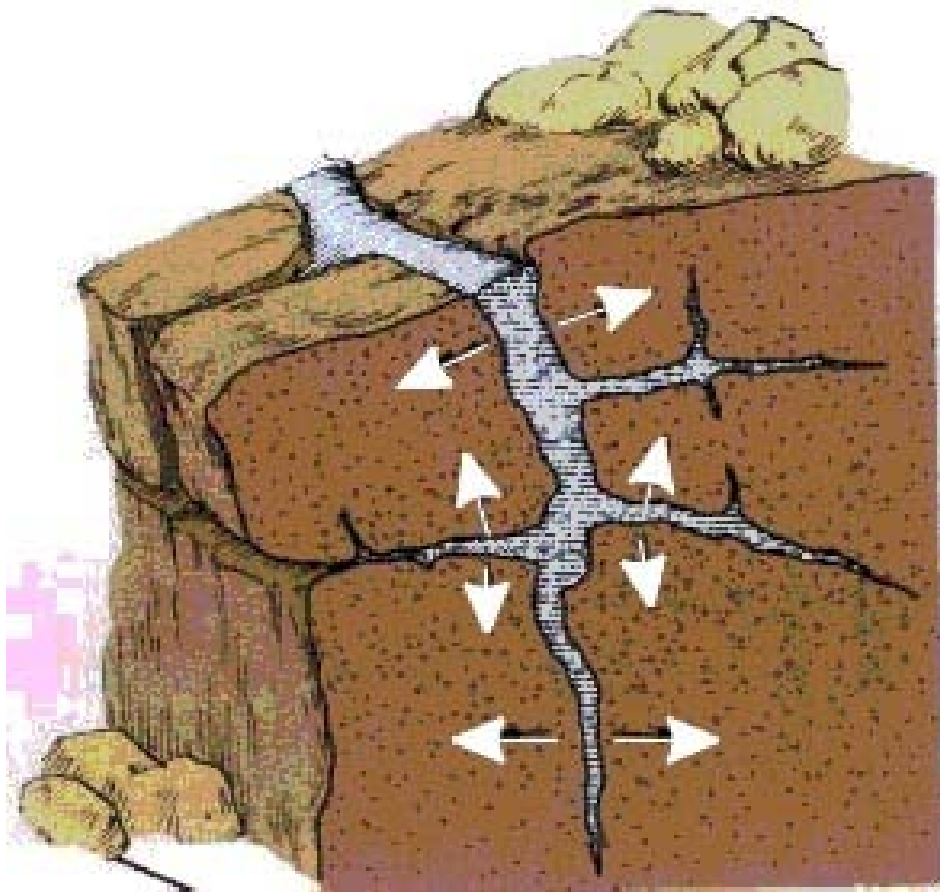
invisible at this scale

mm



inches



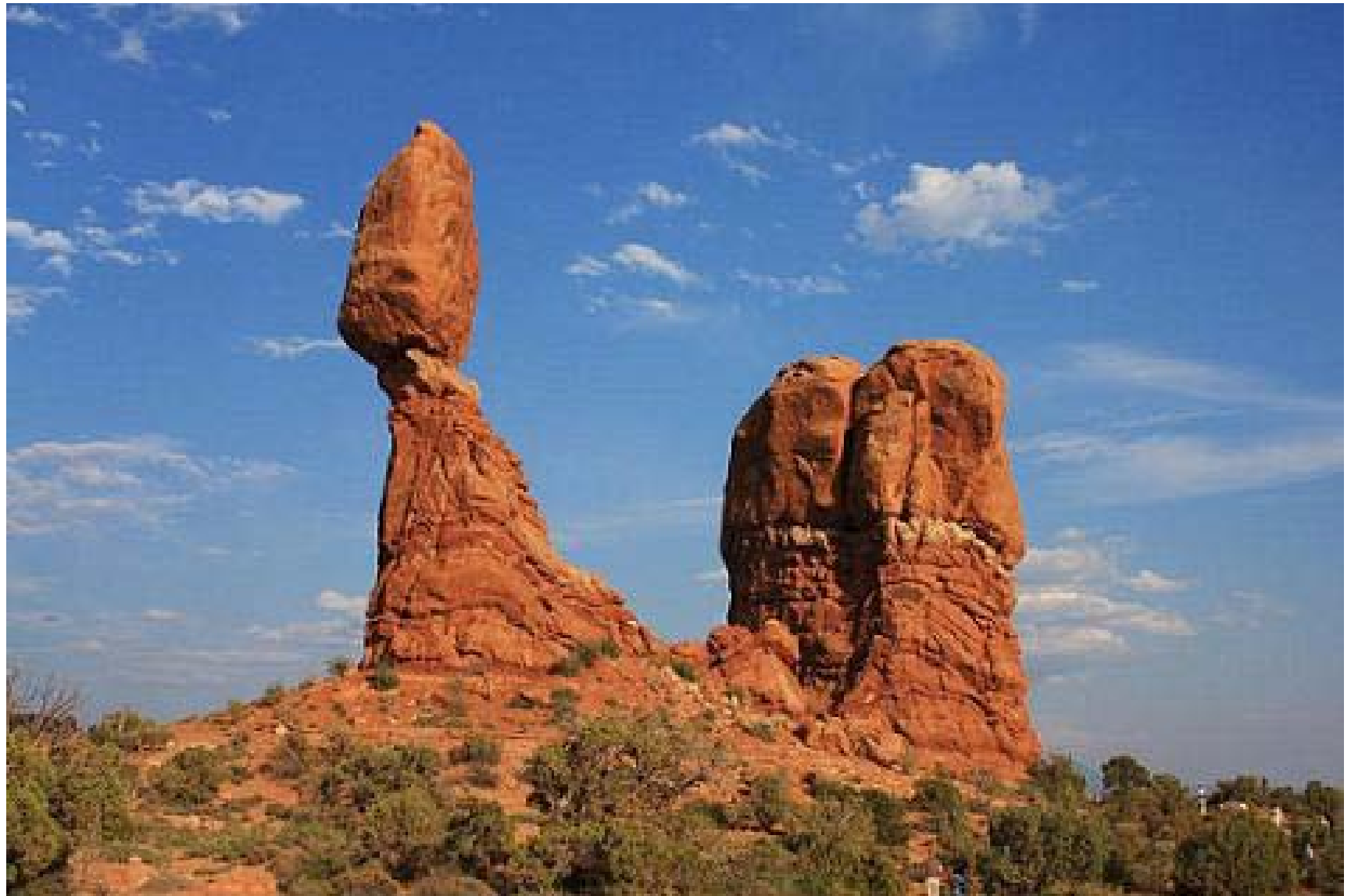


Ice Wedging













▫ Chemical Weathering

- Changes in chemical structure of the rocks that slowly washes away the rocks
- Agents of Chemical Erosion: Rainwater, oxygen, carbon dioxide, and acids created by plant decay and dissolved gases like CO₂
- Not all rocks are subject to chemical weathering
- Ex: limestone undergoes chemical weathering















Severe gully erosion in Bolivia.
Courtesy FAO



Mass Wasting or Mass Movement

