

Earth Science

Chapter 2 Weathering & Soil

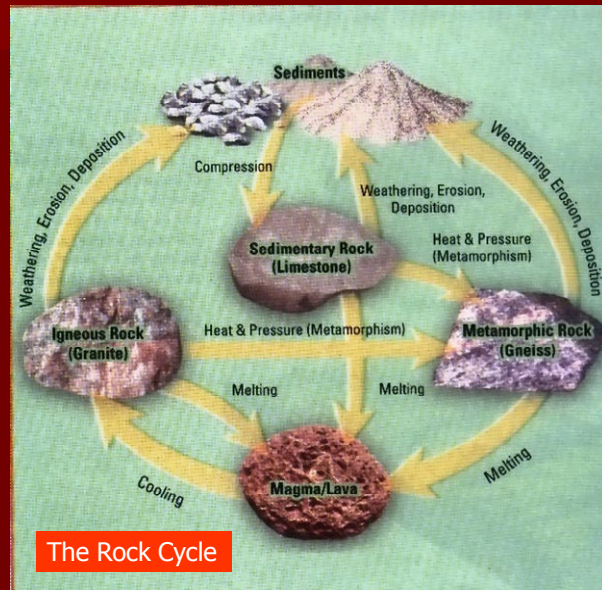
Minerals & Rocks

- Rocks are made up of Minerals.
- Minerals are:
 - Naturally occurring
 - Inorganic
 - Solid
 - Definite chemical composition
 - Specific Crystalline shape

cubic	tetragonal	hexagonal	orthorhombic	monoclinic	triclinic
 examples: halite galena	 examples: zircon chalcopyrite	 examples: sulfur calcite	 examples: sulfur staurolite	 examples: mica gypsum	 examples: feldspar rhodonite

3 Types of Rocks

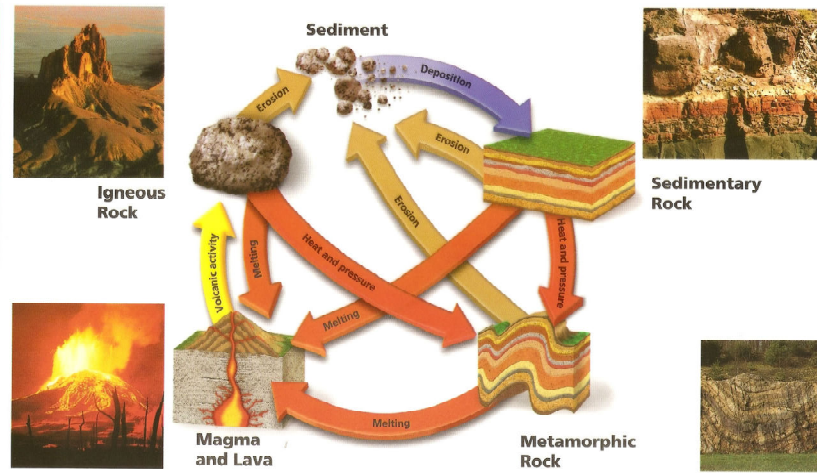
- Igneous
- Sedimentary
- Metamorphic

[illegible]

The Rock Cycle

6.16

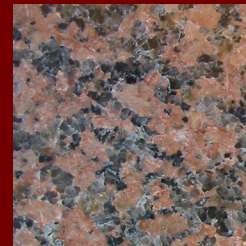
The Rock Cycle



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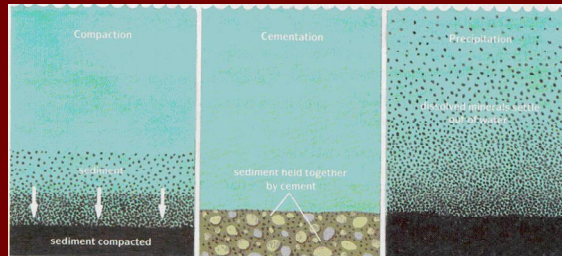
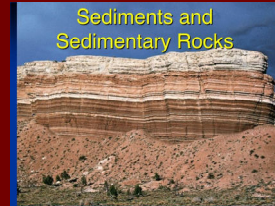
- **Intrusive** – molten material cooled beneath the Earth's surface

- 



- Formed from sediments being **compacted, cemented** or **precipitated** from solutions
- Sandstone, limestone, conglomerate

Sediments and Sedimentary Rocks



- Foliated & nonfoliated

- “Cooked” in Earth’s interior

- Can change igneous, sedimentary or even previously formed metamorphic rocks
- (igneous) **Granite** → **Gneiss** (foliated)
- (sedimentary) **limestone** → **marble** (nonfoliated)



6.15 Forming Metamorphic Rocks

Shale
sedimentary

Heat
and
pressure



Slate
metamorphic,
foliated

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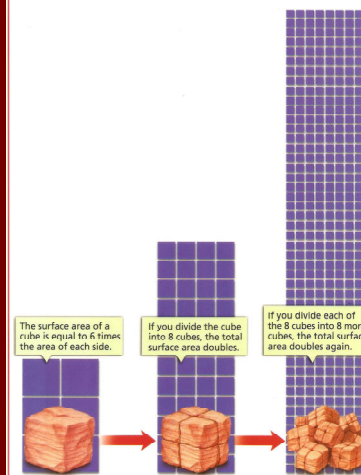
Mechanical Weathering

6.17 Forces of Mechanical Weathering



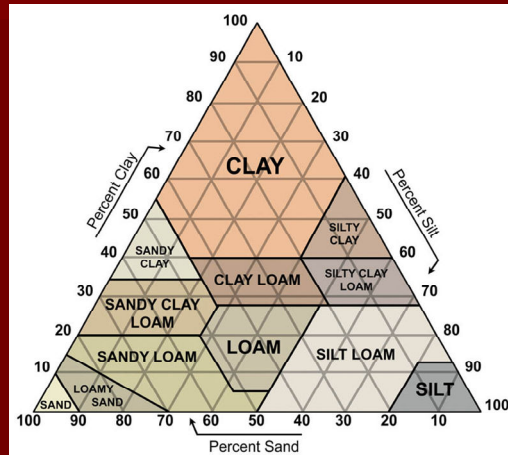
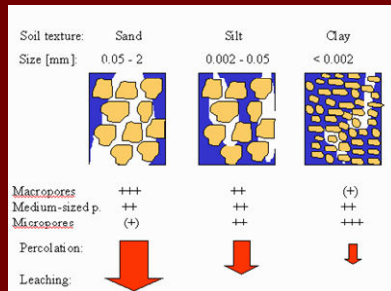
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6.18 Weathering and Surface Area



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- Gravel: $> 2 \text{ mm}$
- Sand: $.05 - 2.0 \text{ mm}$
- Silt: $.002 - .05 \text{ mm}$
- Clay: $< .002 \text{ mm}$



Soil w/ equal parts of sand, silt and clay is called a "loam"

Soil Horizons

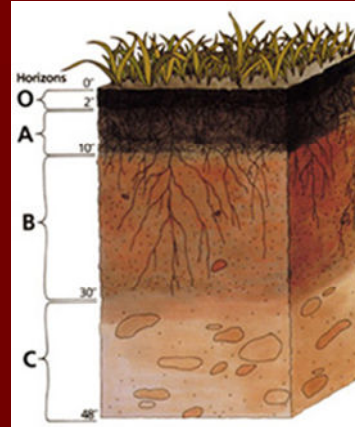
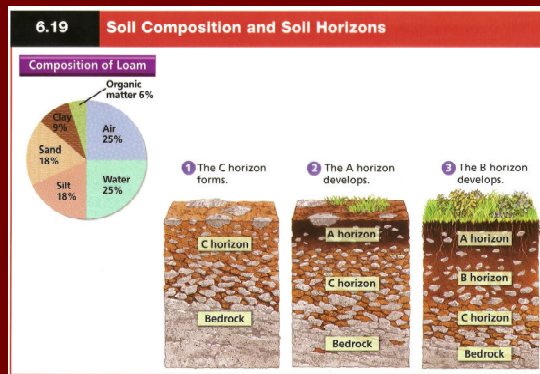
■ Soil Horizon Names and Descriptions:

0: Decaying plants on or near surface

A: Top Soil, Organic Rich

B: Subsoil, Most Diverse Horizon and the Horizon with the most sub classifications

C: Weathered/aged parent material



6.20 Life in Soil

The diagram illustrates the vertical structure of soil and the organisms that inhabit it. The soil is divided into four main layers: Litter, A Horizon, B Horizon, and C Horizon. The Litter layer is the topmost layer, composed of organic matter. The A Horizon is the topsoil layer, which is rich in organic matter and nutrients. The B Horizon is the subsoil layer, which is composed of minerals and organic matter. The C Horizon is the parent material layer, which is composed of weathered rock. The diagram also shows the distribution of various organisms: Snails and beetles, Chipmunks, Ants, Earthworms, Bacteria (decomposers), Fungi (decomposers), Insect larvae, Burrowing animals (mouse), and Plant roots. A vertical axis on the left indicates the depth of each horizon.

Soil Horizons:

- Litter
- A Horizon
- B Horizon
- C Horizon

Organisms and Features:

- Plant roots
- Insect larvae
- Snails and beetles
- Chipmunks
- Ants
- Earthworms
- Bacteria (decomposers)
- Fungi (decomposers)
- Burrowing animals (mouse)