

SOILS

WEATHERING

** The processes by which rocks are **chemically altered or physically broken** into fragments as a result of exposure to atmospheric agents and the pressures & temperatures at or near the Earth's surface, **with little or no transportation of the loosened or altered materials.**

* 2 Principle Types of Weathering:

* **Mechanical or Physical**

* **Chemical**

** **Mechanical or Physical Weathering**

** the breakdown or disintegration of rocks into smaller fragments by physical processes. **With no chemical alteration.**

* **By-products of weathering:**

* **regolith:** the partially weathered rock below the surface which overlays the bedrock

* may in time become parent material, soil, or exposed at the surface

* **parent material:** unconsolidated material, from organic & mineral sources, that is the basis of soil development/formation

SOIL

** the fine material covering the Earth's surface composed of both mineral & organic material; dirt

** *weathering* provides the raw materials (*parent material*) for soil formation & development

* **Soil Characteristics:**

* ***soil profile:*** a vertical section of soil from the ground surface to the parent rock

* ***soil horizon:*** a layer in a soil profile

* **Soil Properties:**

* ***color*** * ***texture*** (clay, sand, silt)

* ***structure*** * ***consistence*** (cohesion)

* ***porosity*** * ***moisture***

SOIL FORMATION

* an on-going process of a renewable resource, but not an inexhaustible resource

** **Components of Soil:**

Minerals:

Organic matter:

Water:

Air:

**** Factors Involved in Formation:**

Parent Material: Parent material is the underlying geological material (generally bedrock or a superficial or drift deposit) in which soil horizons form. Soils typically inherit a great deal of structure and minerals from their parent material, and, as such, are often classified based upon their contents of consolidated or unconsolidated mineral material that has undergone some degree of physical or chemical weathering and the mode by which the materials were most recently transported.^[1]

**** residual soil:** made from the underlying rock

**** transported soil:** made from material not found in underlying rock

Climate: if temperature and precipitation (moisture) differ, will yield different soils, even from same parent material

Biological Agents: decomposers, microorganisms, bacteria, fungi, type of humus or organic matter

Topography: flat vs steep slopes; windward vs leeward slopes; sun exposure

Time: for a given place, more time means more complete development
& increased thickness of soil

Development Processes of Soil Horizons:

**** Soils develop layers or horizons (OAEBCR), often quite distinct, by 4 processes**

Addition: grains of soil made by adding material to the soil already in place;
adding organic matter

Transformation: weathering of rock, minerals, & soil particles already present;
physically or chemically changing them