

WEATHERING AND SOIL FORMATION NOTES

- I. **Weathering – the natural process that breaks down rock into smaller and smaller pieces**
 - A. **Types of Weathering**
 1. **Physical(Mechanical) Weathering – the breakdown of rock by physical means**
 - a. **Agents of Mechanical Weathering**
 1. **Ice – water in rock freezes and expands breaking the rock into smaller pieces**
 2. **Wind, Water, Gravity –**
 - a. **abrasion – the grinding and wearing down of rocks by other rocks or sand particles**
 3. **Plants – roots can crack rocks over time**
 4. **Animals – (ex. earthworms, burrowing animals) move soil exposing new layers to weathering**
 2. **Chemical Weathering – the chemical breakdown of rocks and minerals into new substances**
 - a. **Agents of Chemical Weathering**
 1. **Water – can slowly dissolve rock over many years**
 2. **Acids in Precipitation – caused by air pollution (ex. sulfuric, carbonic and nitric acids)**
 3. **Acids in Ground Water – can dissolve limestone sometimes forming caves**
 4. **Air**
 - a. **Oxidation – chemical reaction where an element such as iron combines with oxygen in air to form an oxide(ex. Rust is Iron Oxide)**
 - B. **Rates of Weathering – different types of rock weather at different rates**
 1. **Differential Weathering – process where softer rock weathers away leaving harder rock behind (ex. Devil’s Tower, Wyo)**
 2. **Shape of Weathering – weathering takes place on the outside surface of rocks so the more surface area exposed the faster it weathers (small rocks weather faster since more surface area is exposed)**
 3. **Weathering and Climate – wet/humid climates weather rock faster than dry climates**
 4. **Weathering and Elevation – rocks at high elevations are more exposed to wind, water, and ice so they weather faster**
 - C. **Bedrock to Soil**
 1. **Sources of Soil – (Soil is the loose mixture of small mineral fragments and organic matter)**
 - a. **Parent Rock – the rock that is the source of soil; type of soil formed depends on the type of rock that is weathered**
 - b. **Bedrock – the layer of rock beneath the soil**
 - c. **Residual Soil – soil that remains above its parent rock**
 - d. **Transported Soil – soil washed or blown away from its parent rock**
 - e. **Humus – decayed plant and animal material found in soil**
 - D. **Soil Conservation – the way people take care of the soil**
 1. **Importance of Soil – provides minerals and nutrients for plants, housing for animals**
 2. **Preventing Soil Erosion**
 - a. **Erosion – the process by which wind and water move soil and sediment**
 1. **Cover crops, Contour Plowing and Terracing are all used to slow erosion**
 - b. **Deposition – the process where wind and water lose energy depositing soil sediments**
 1. **Heavier sediment is deposited first, the lighter sediment is carried along further**