

Weathering - the break-up of rock mainly by exposure to the atmosphere (in place, no transportation)

Erosion - the break-up and transport of materials by moving natural agents: streams, glaciers, wind + waves

Types of Weathering:

A. Mechanical/Physical - disintegration - rock is split or broken into smaller pieces of the same material, no change in composition

Types of Mechanical/Physical:

1. Frost action/ice wedging - freezing H_2O expands 10% and wedges rocks apart.
2. significant changes in temperature (ex. forest fire) can crack rocks
3. actions of plants and animals
biological weathering }
 - plant roots go into cracks, wedging
 - ants, worms - dig holes
4. exfoliation - unloading of overlying rock and soil allows the rocks below to expand and crack in curved breaks → exfoliated domes

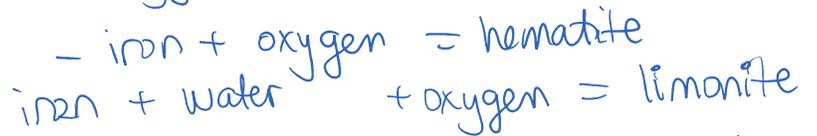
B. Chemical - decomposition - rock's minerals change into different substances

into different substances

Types of Chemical:

1. rainwater - certain minerals (feldspars, hornblende, etc) unite with water (hydration), swell and crumble into clay.

2. oxidation - iron (or other substances) materials (magnetite, pyrite, hornblende, etc) combine with oxygen to form iron oxide (rust)

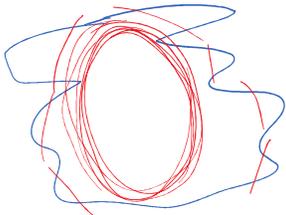


3. carbon dioxide - dissolves in water to form carbonic acid (natural acid rain) attacks many minerals (esp. calcite) and dissolves some elements (K, Na, Mg, Ca) and turns minerals to clay.

4. man-made acid rain - similar effects ↗

biological weathering ↘ 5. acids of plant/animal decay - similar effects ↗

- Spheroidal weathering - corners are most susceptible to breaking (more surface area to attack)



- chemical weathering occurs fastest in hot, rainy climates

- phys + chem weathering can "help" each other out.

- weathering forms spectacular shapes as softer rocks weather more quickly = differential weathering

- weathering forms spectacular shapes as softer rocks erode away more quickly = differential weathering
- rocks being broken up create sediment + soil

Summary

