

# Weathering and Erosion



# Weathering

- The breakdown of the materials of Earth's crust into smaller pieces.

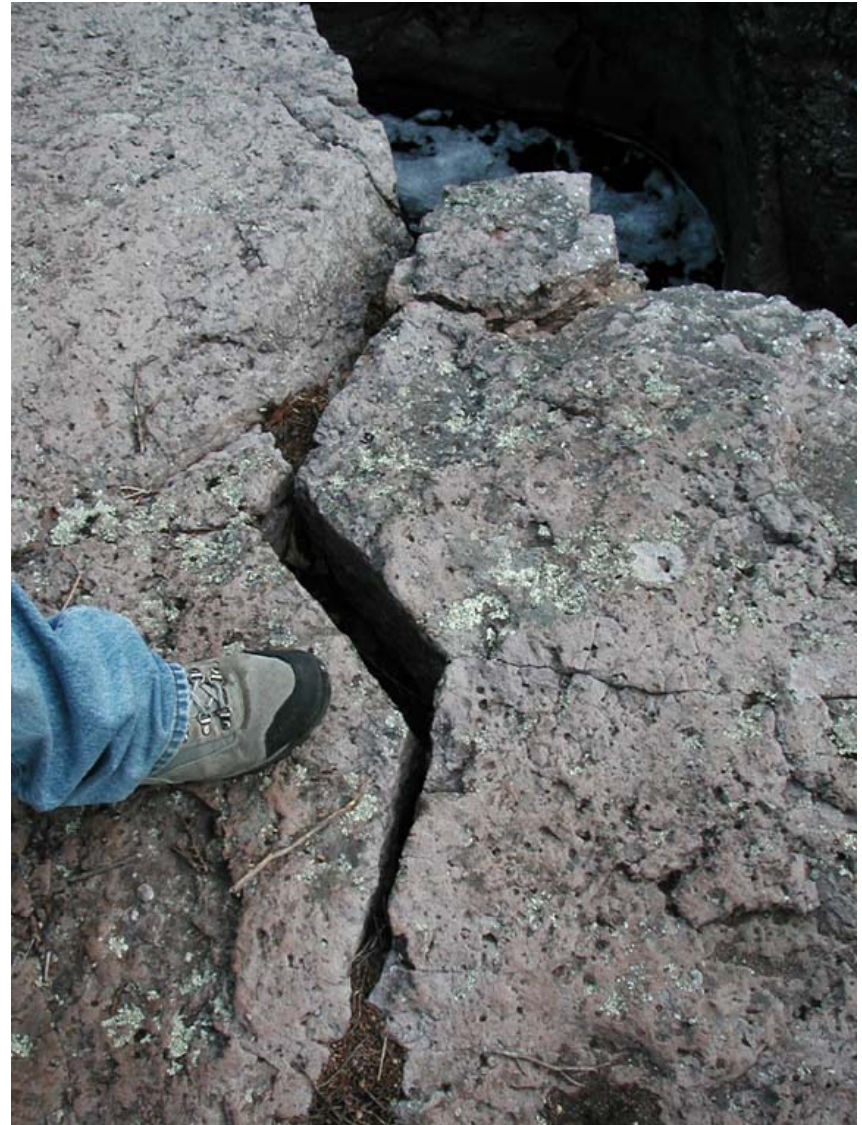
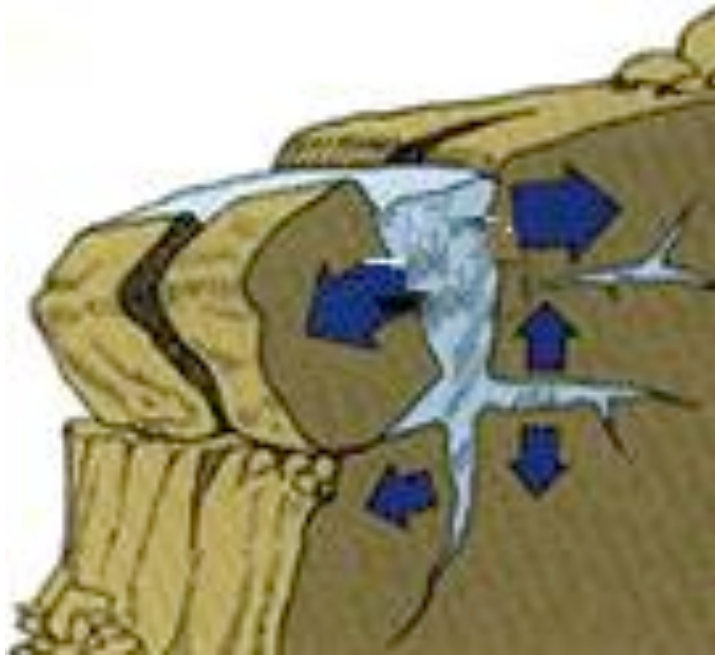


# Physical Weathering

- Process by which rocks are broken down into smaller pieces by external conditions.
- Types of Physical weathering
  - Frost heaving and Frost wedging
  - Plant roots
  - Friction and impact
  - Burrowing of animals
  - Temperature changes



# Frost Wedging

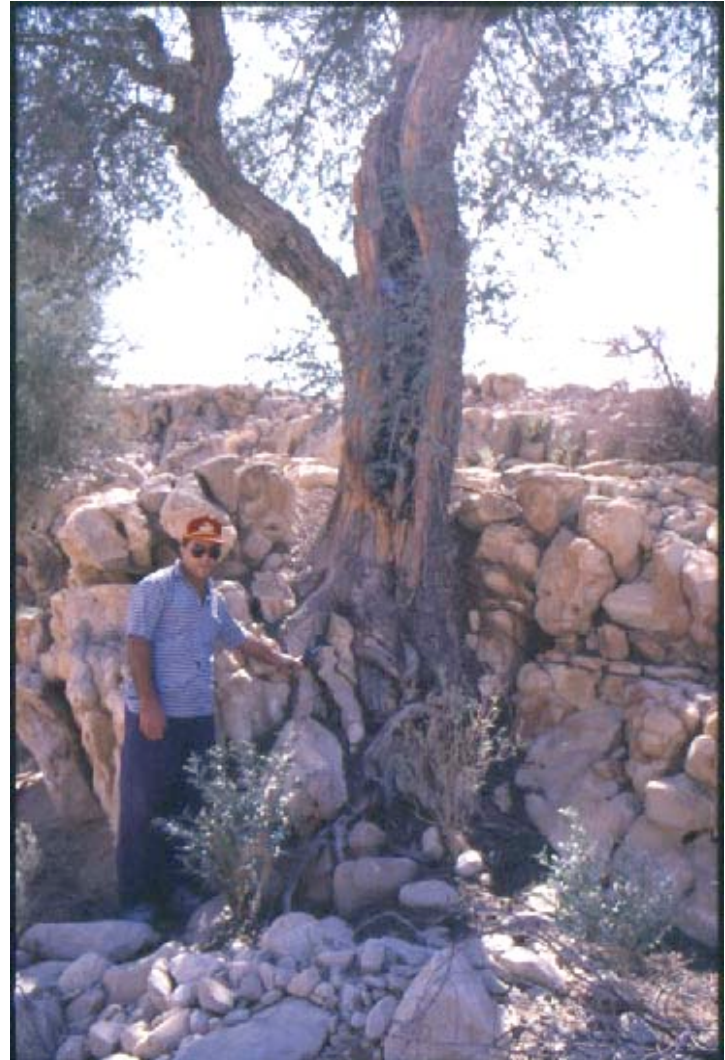


# Frost Heaving





# Plant Roots



# Friction and Repeated Impact



# Burrowing of Animals





# Temperature Changes



Courtesy Canadian Fire Research

# Chemical Weathering

- The process that breaks down rock through chemical changes.
- The agents of chemical weathering
  - Water
  - Oxygen
  - Carbon dioxide
  - Living organisms
  - Acid rain

# Water

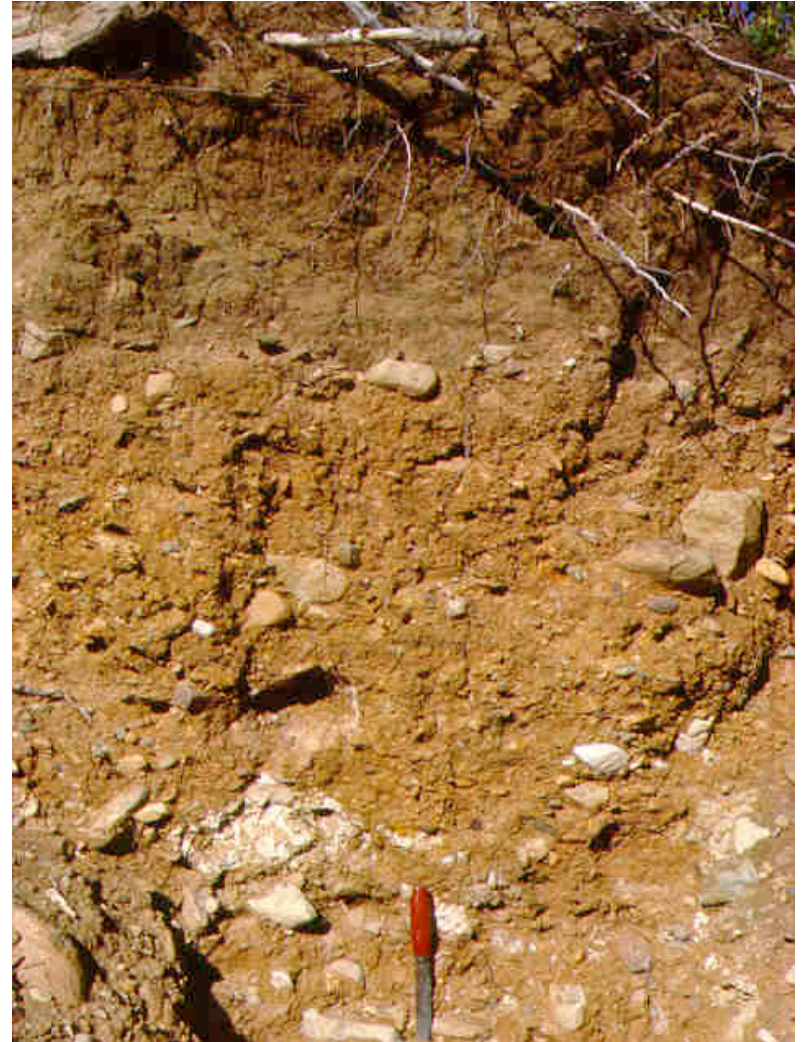
- Water weathers rock by dissolving it





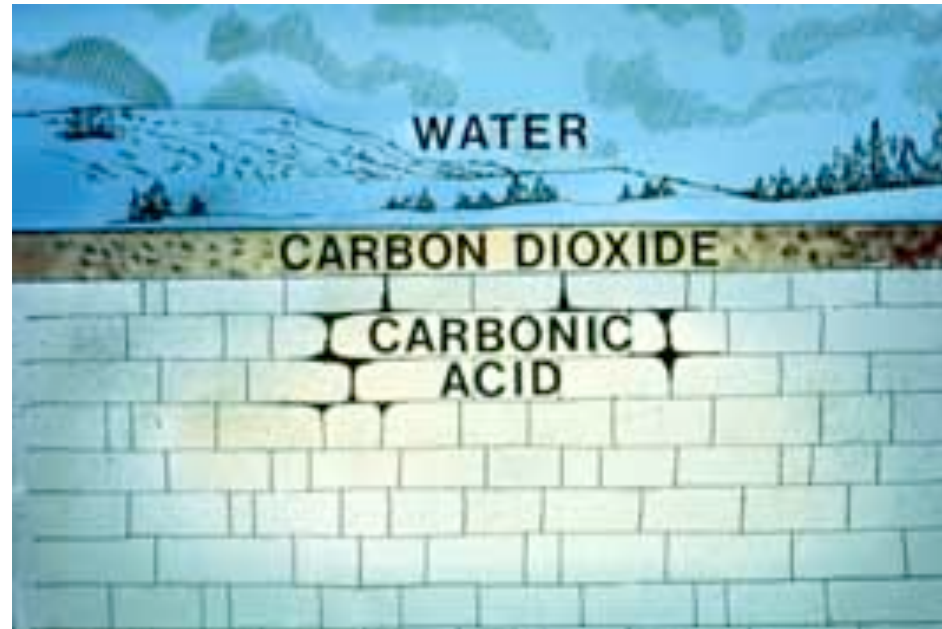
# Oxygen

- Iron combines with oxygen in the presence of water in a processes called oxidation
- The product of oxidation is rust



# Carbon Dioxide

- $\text{CO}_2$  dissolves in rain water and creates carbonic acid
- Carbonic acid easily weathers limestone and marble





# Living Organisms

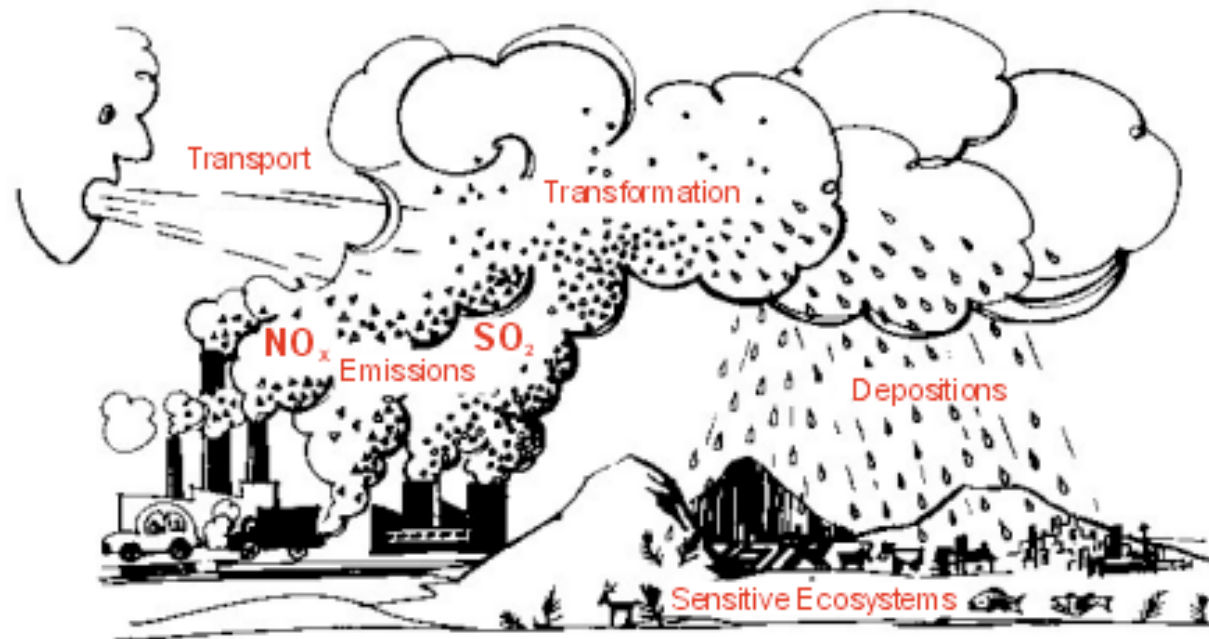
- Lichens that grow on rocks produce weak acids that chemically weather rock





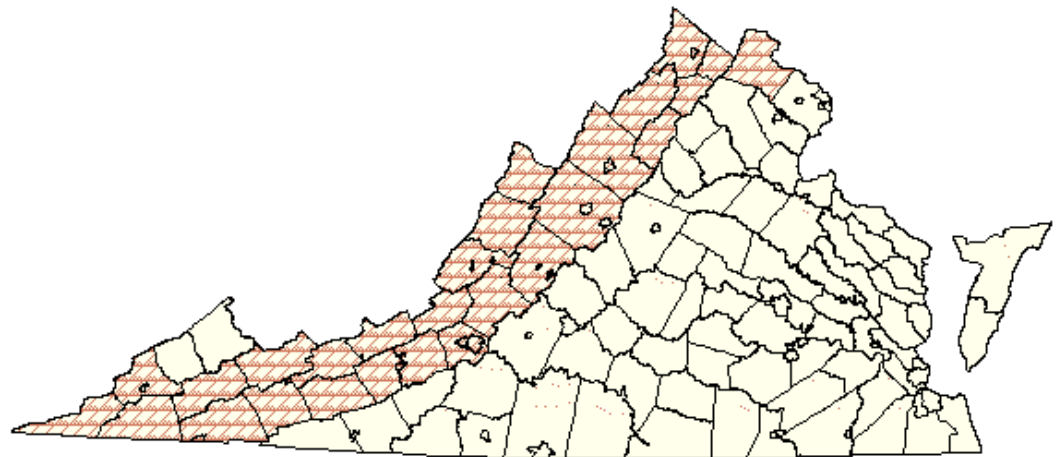
# Acid Rain

- Compounds from burning coal, oil and gas react chemically with water forming acids.
- Acid rain causes very rapid chemical weathering



# Karst Topography

- A type of landscape in rainy regions where there is limestone near the surface, characterized by caves, sinkholes, and disappearing streams.
- Created by chemical weathering of limestone



# Features of Karst: Sinkholes





# Features of Karst: Caves





# Features of Karst: Disappearing Streams



# Erosion

- The process by which water, ice, wind or gravity moves fragments of rock and soil.





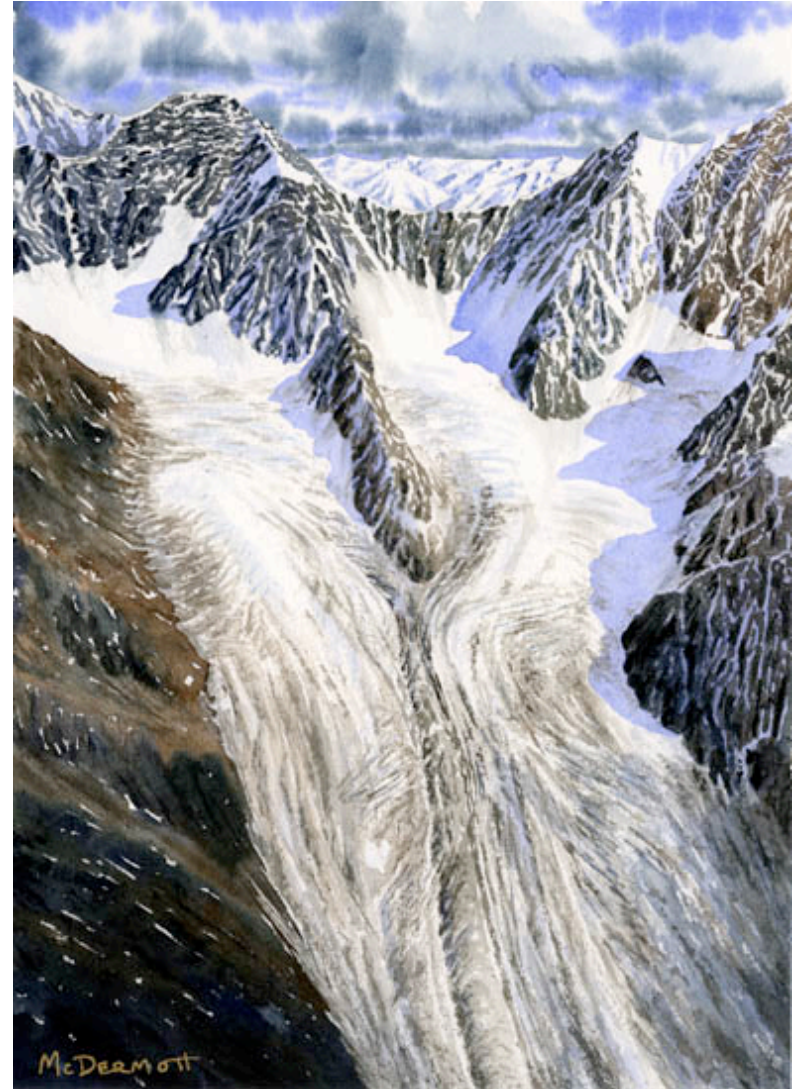
# Water Erosion

- Rivers, streams, and runoff



# Ice Erosion

- Glaciers





# Wind Erosion





# Mass Movements

- Landslides, mudslides, slump and creep



[landslide clip.mpeg](#)