



# WEATHERING AND SOILS

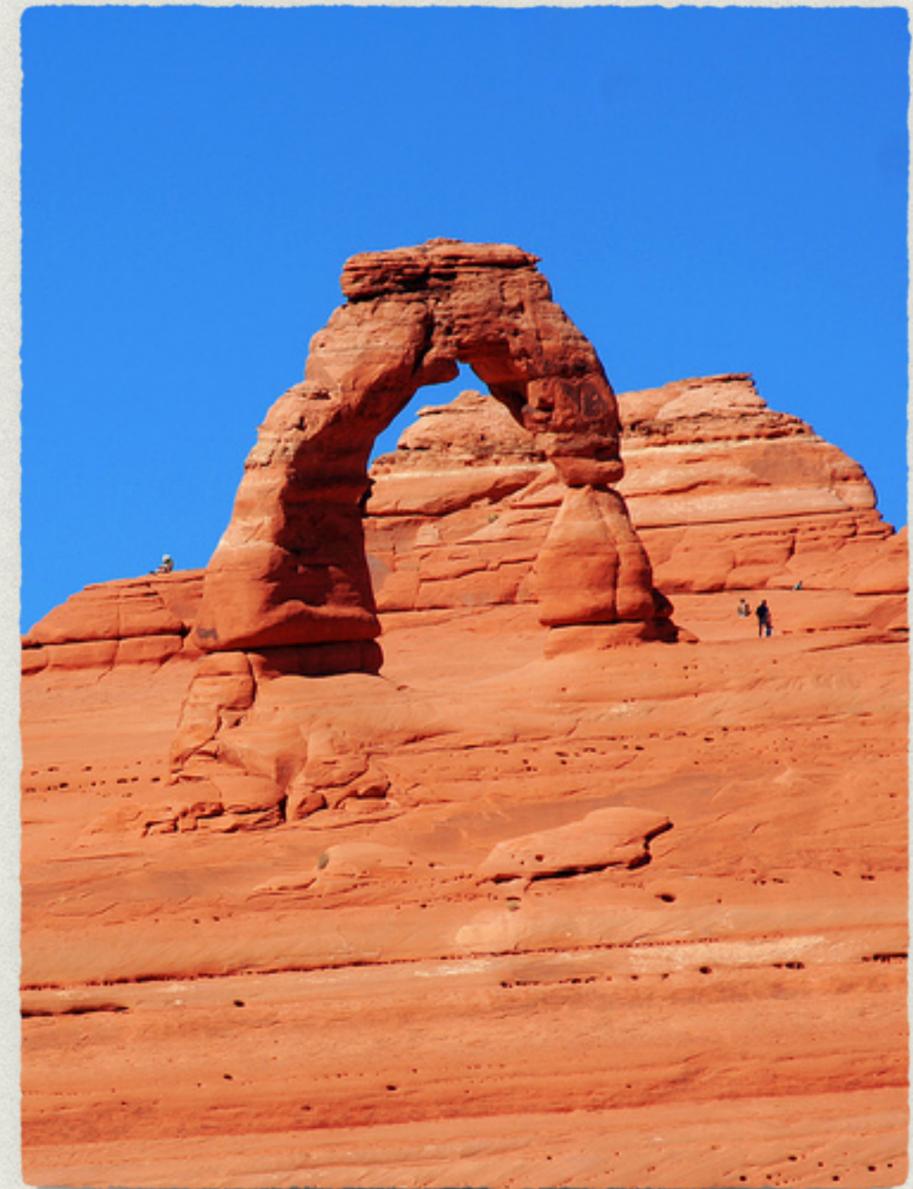
What are processes shape our Earth?

# WEATHERING AND SOILS



# WEATHERING AND SOILS

- Weathering - the breakdown of rock at or near the Earth's surface
- Sediments - smaller pieces of rock that have undergone weathering



# WEATHERING AND SOILS

- Weathering occurs when rocks are exposed to:
  - Air
  - Water
  - Actions of Living Things



# WEATHERING AND SOILS

- Chemical Weathering - the breakdown of rock through a change in mineral or chemical composition
  - The rate of chemical weathering increases in warm and moist climates



# WEATHERING AND SOILS



Before



After

# WEATHERING AND SOILS

- Oxidation - when iron combines with oxygen to make rust



# WEATHERING AND SOILS

- Effects of Water on Rock:
  - Sometimes called the universal solvent, because given enough time water can dissolve nearly anything
  - Water can combine with  $\text{CO}_2$  to form carbonic acid
  - Carbonic acid can dissolve most rock [e.g. limestone]

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- Sinkhole - a natural depression in a land surface formed by the collapse of a cavern roof



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**Chemical Weathering**

# WEATHERING AND SOILS

- Physical Weathering - the breakdown of rock into smaller pieces without chemical change



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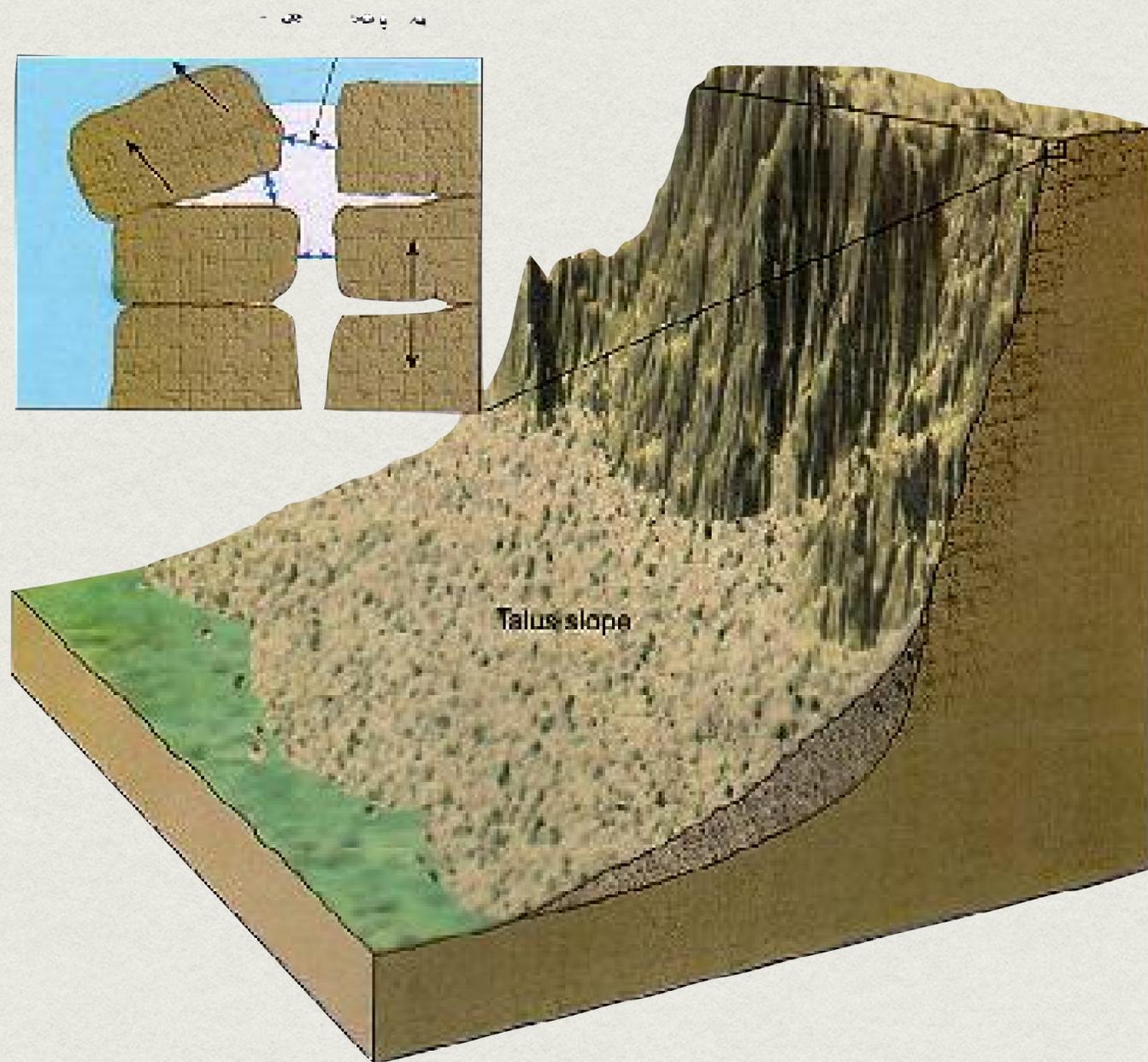
- Abrasion - occurs when rock particles grind against rock
  - Characteristics: round shaped rocks



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- Frost Action - weathering process caused by cycles of freezing and thawing of water in rock openings
  - Water infiltrates cracks in the rock and when it freezes expands [approximately 10%] to split the rock apart
  - Infiltration - the process which water penetrates into soil or rock

# WEATHERING AND SOILS



Frost Action



Potholes

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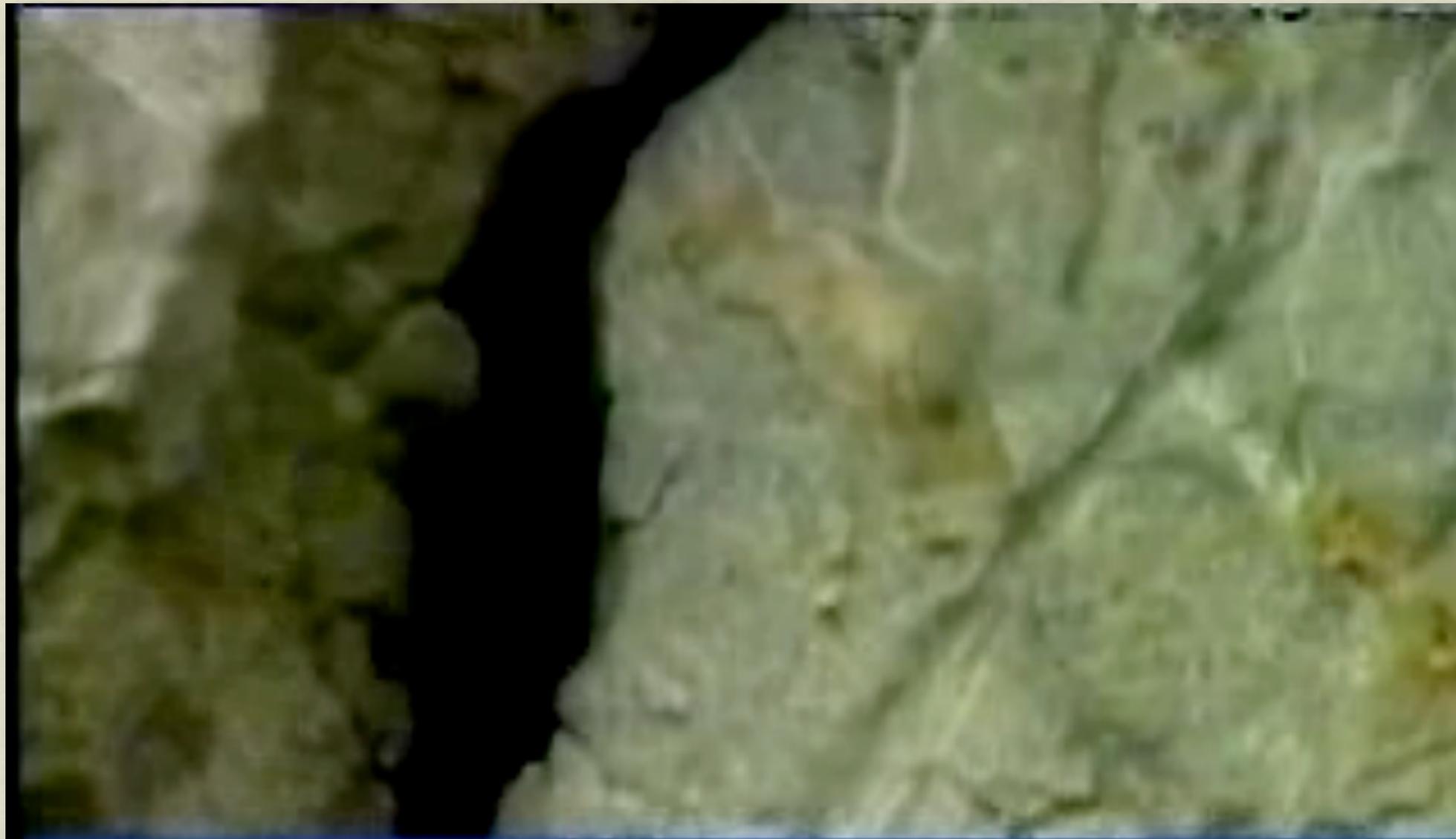
- Plant Root Growth - as plants grow they can also spread cracks apart even farther



# WEATHERING AND SOILS

- Abrupt Temperature Changes -  
as temperature increases rocks  
expand and fracture





## Physical Weathering

# WEATHERING AND SOILS

- Physical and chemical weathering processes are important in the formation of soil
- Soil is a mixture of weathered rock particles and organic matter that supports rooted plants



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- Humus - part of the soil that serves as a source of plant nutrients



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- Soil Layers

