

# Moving Rock

Weathering, Erosion and  
Deposition



Strata

	Erosion	Weathering	Deposition
Definition			
Agents/Factors of			
Types/Examples	Shoreline- Water- Ice- Wind- Gravity-	Mechanical Weathering- -Plate Movement- -Exfoliation -Plants and Animals  Chemical Weathering-	Glaciers- Wind- Water- Mass Movements-
Key Terms		(MW) Abrasion- (CW) Oxidation- (CW) Acid Precipitation- (CW) Ice Wedging-	



# Weathering

- ◆ Processes that change the characteristics of rocks on the Earth's surface
  - ◆ Must occur BEFORE erosion can happen
  - ◆ No movement is involved
  - ◆ Occurs naturally when exposed to the elements (like wind, water, ice, plants and animals)
- 

# Weathering Vs Erosion

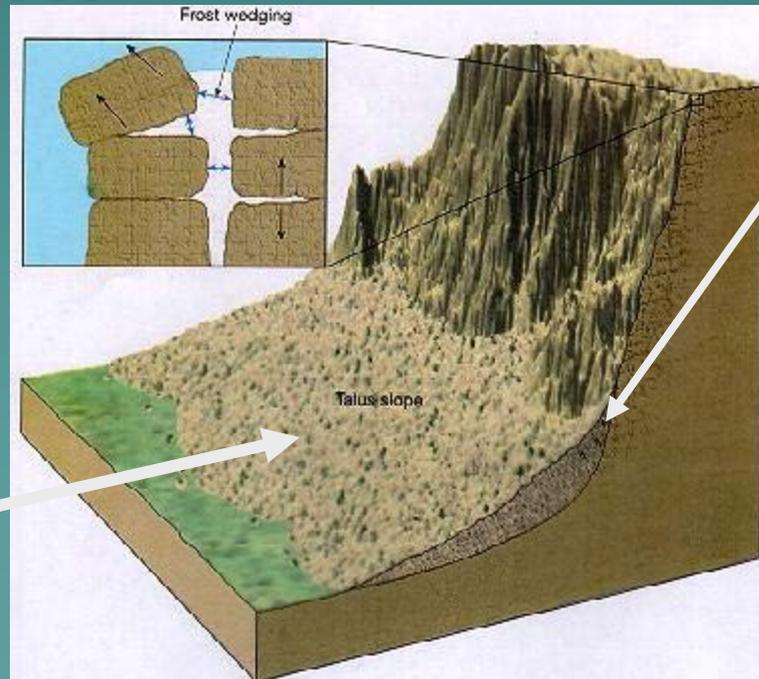
## ◆ Weathering

- Breaking down of rocks and other particles into smaller pieces

## ◆ Erosion

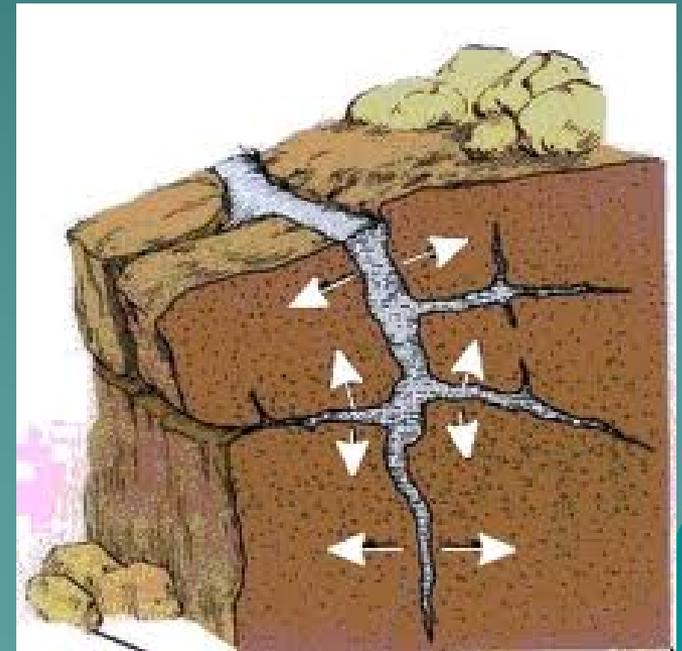
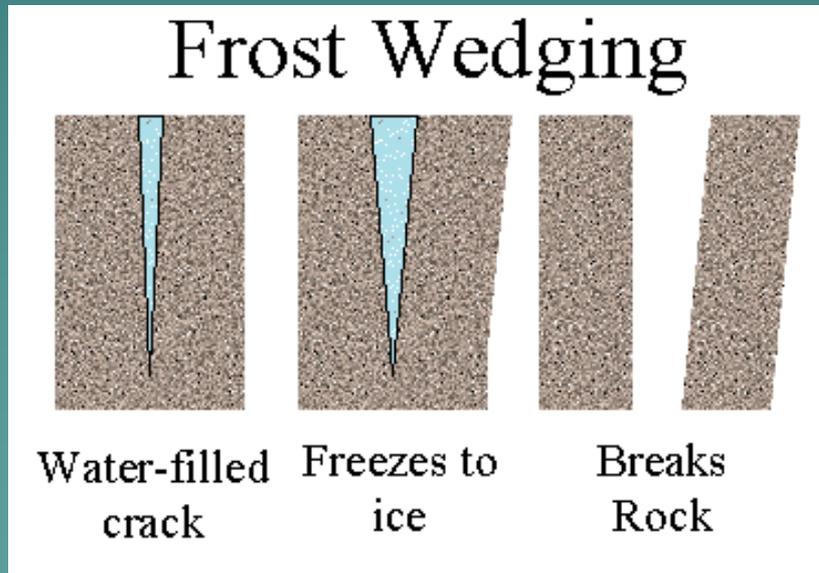
- Transport of the weathered particles.

TALUS:  
**Pile of sediment at bottom of slope**



# Mechanical/Physical Weathering

Changing the shape and or size of an object without changing the chemical make up.

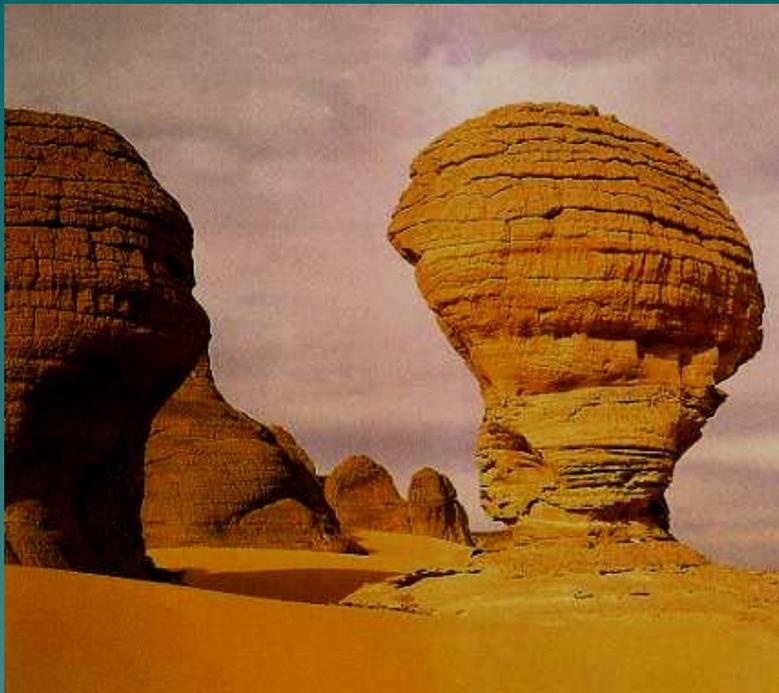


# Water

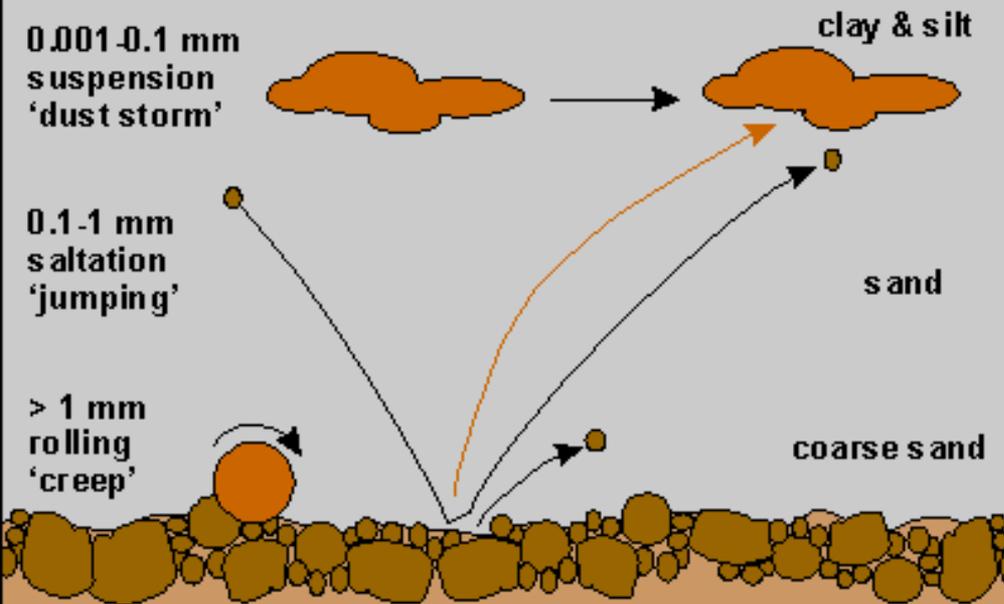
- ◆ Water when driven by gravity goes down slope weathering the rocks.



# Wind

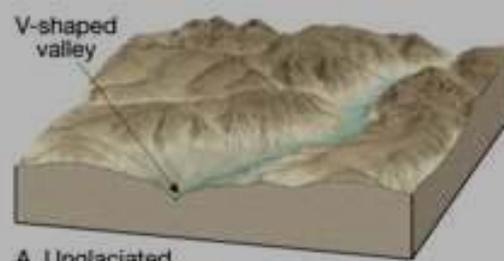


## wind erosion

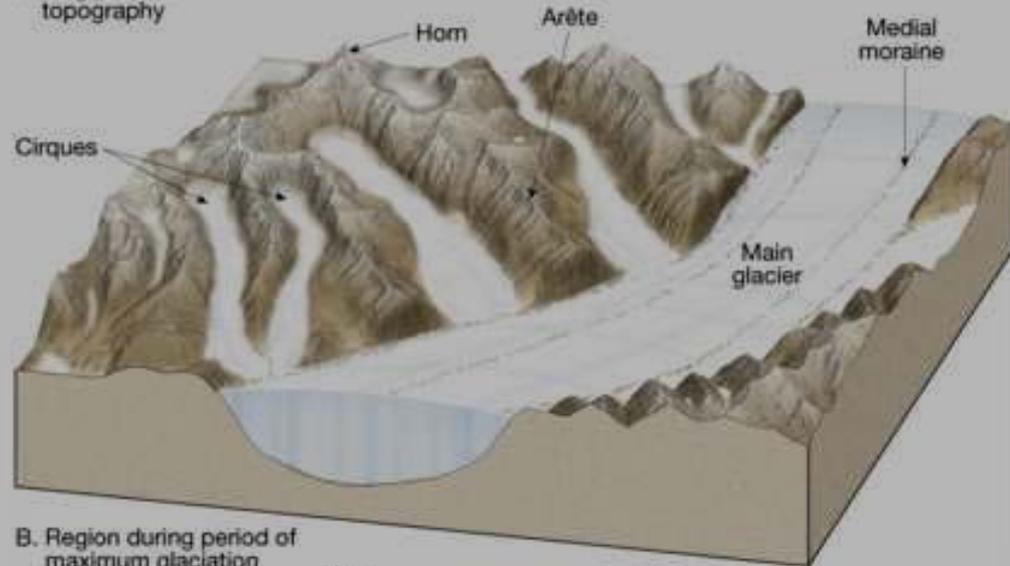


# Ice

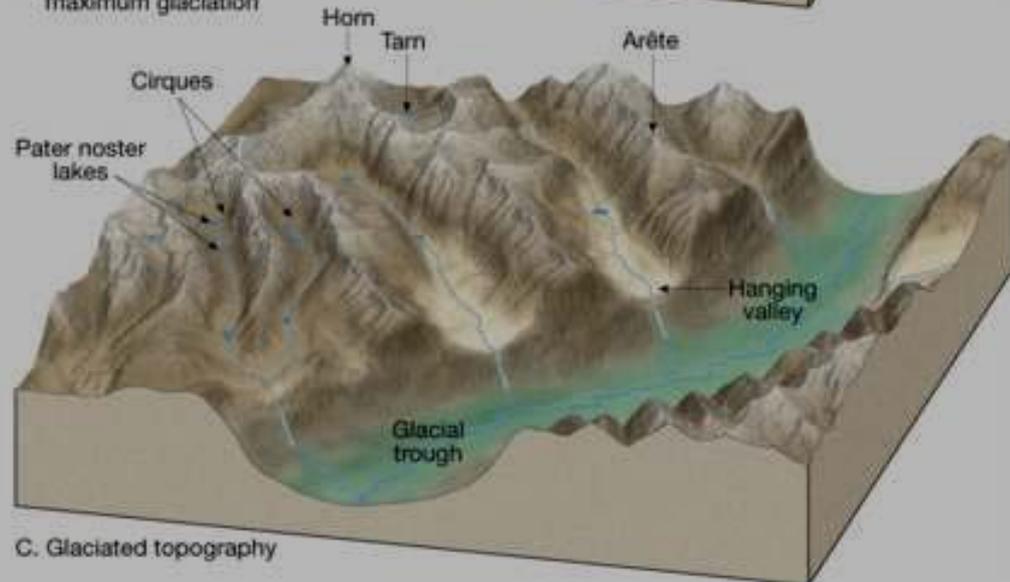
- ◆ Glaciers move ice down a slope picking up sediments along the way.



A. Unglaciating topography



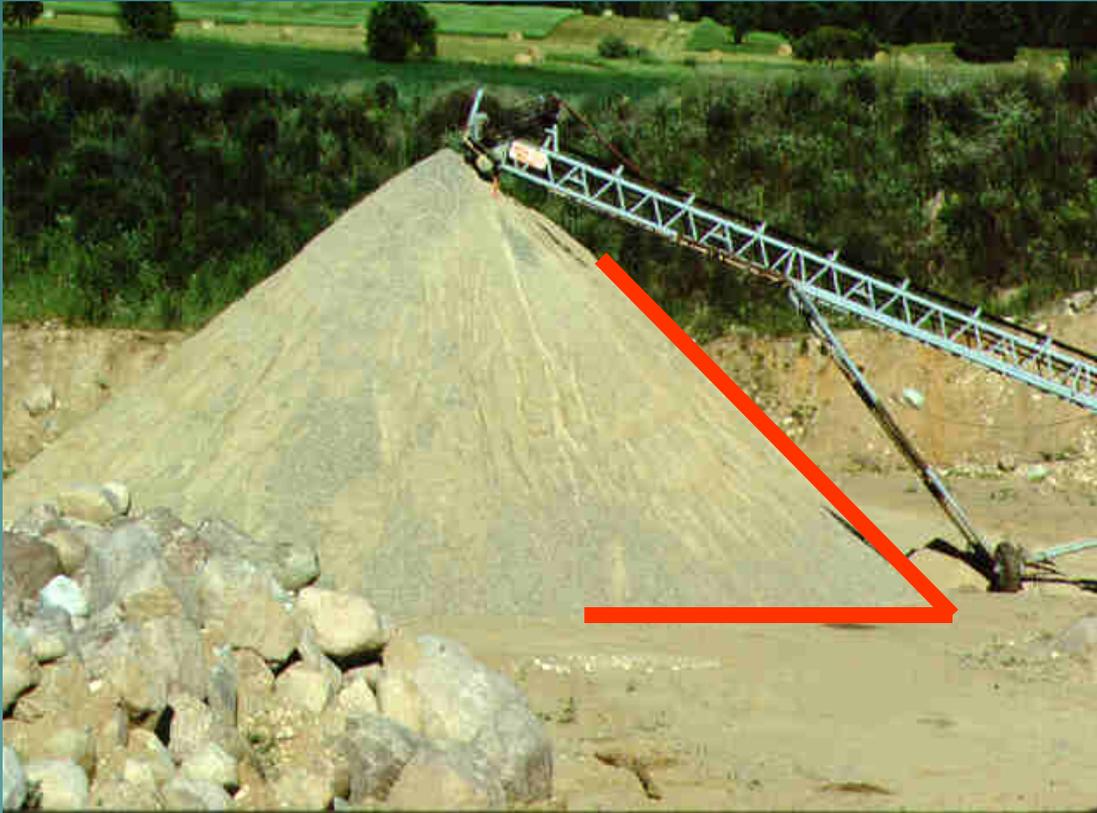
B. Region during period of maximum glaciation



C. Glaciated topography

# Gravity

- ◆ Mass movements takes place when soil fails and falls or slides down a slope.



# Types of Mechanical Weathering



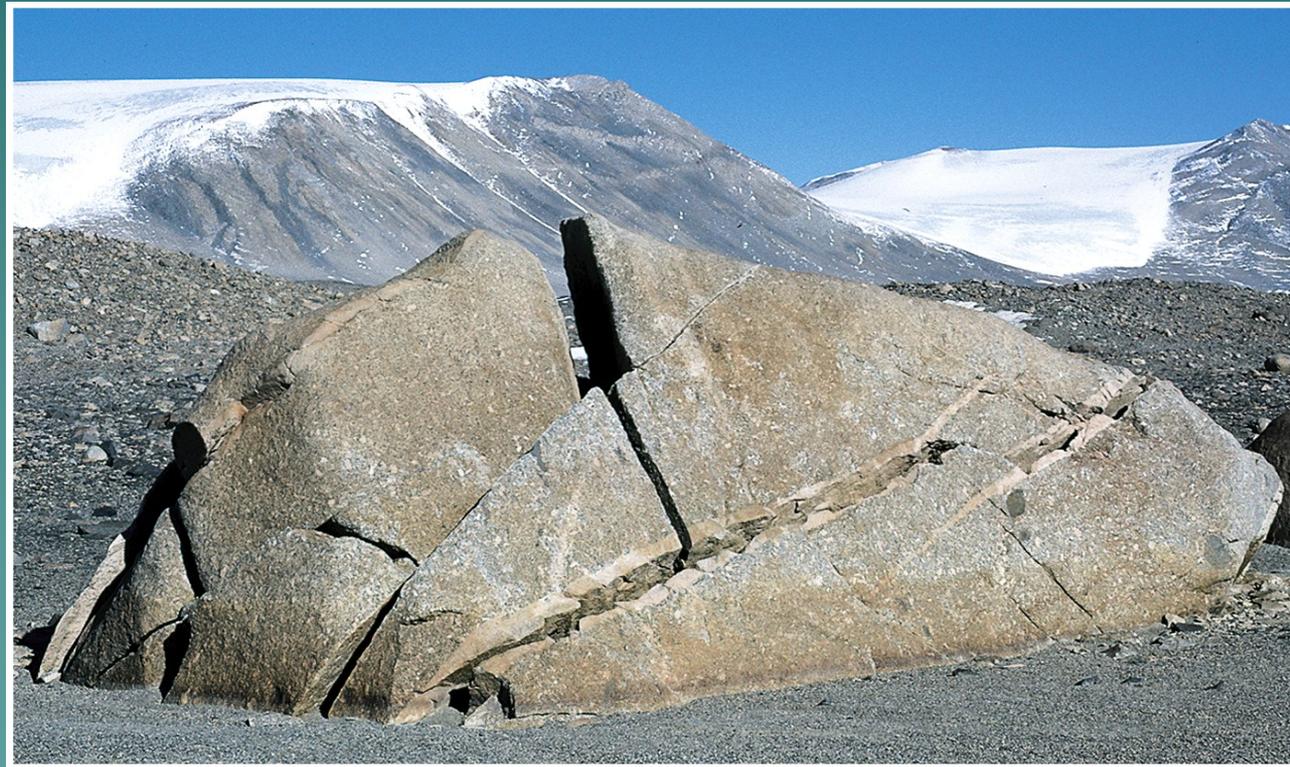
# Abrasion

- ◆ Breaking, grinding, wearing away of rock
- ◆ Caused by wind and water



# Frost Action or Ice Wedging

- ◆ Freezing water in cracks expands and breaks rocks



# Plate Movement

- ◆ The moving and sliding of tectonic plates wear away rocks as they slide past each other



# Exfoliation / Temperature Change

- ◆ Warming and cooling of rock causes top layers to break off in sheets



# Plants and Animals

- ◆ Wedging of roots and burrowing of animals wears away rock





Weathered tree trunks in Great Basin National Park, Nevada  
Photograph by Richard Olsenius



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# Chemical Weathering

- ◆ Process by which rocks are decomposed, dissolved or loosened by chemical processes to form sediment

# Chemical Weathering

- ◆ Changing the chemical makeup of a material.

**OXIDATION**

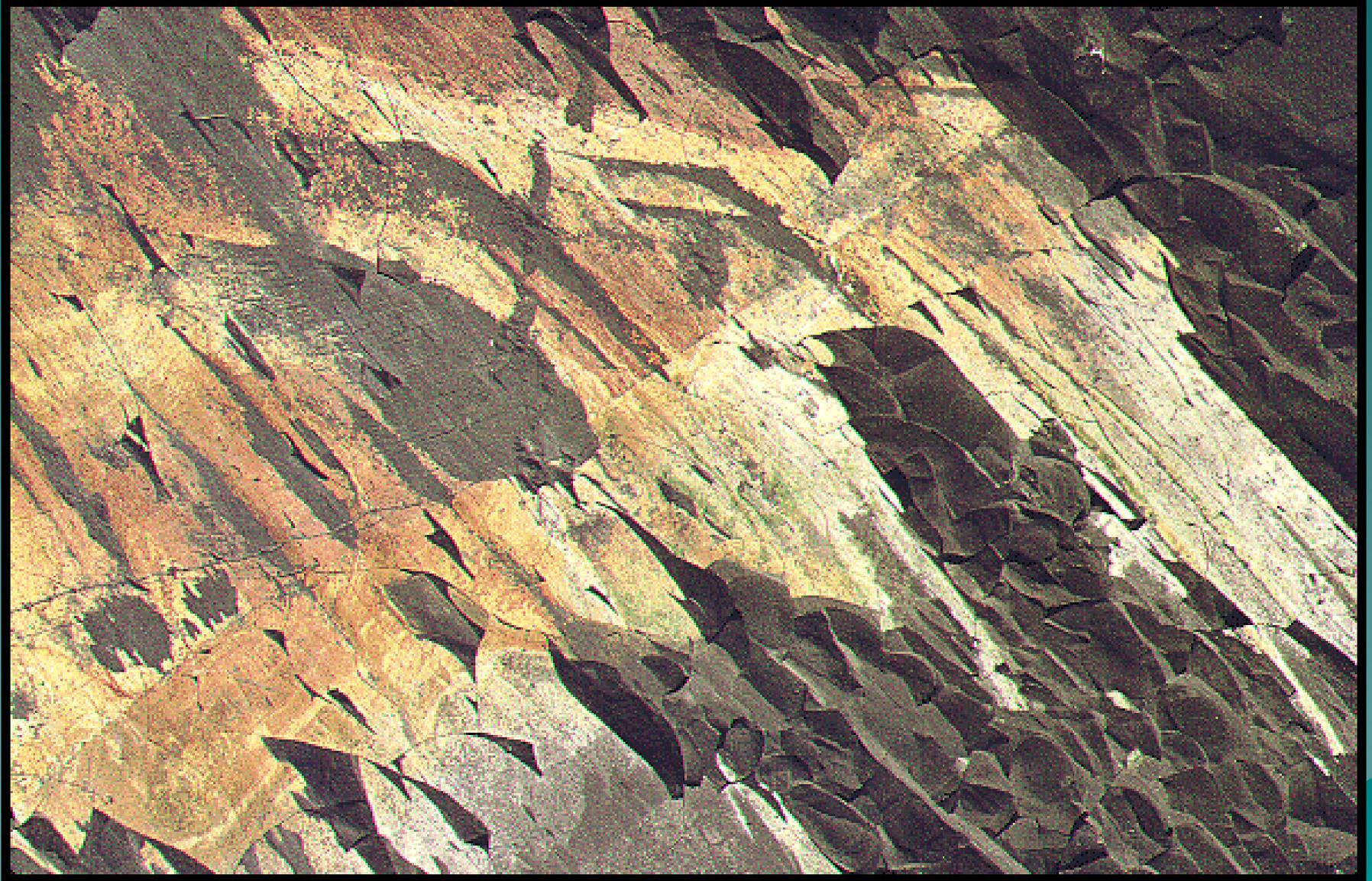


# Types of Chemical Weathering

**Oxidation** is the formation of rust on iron caused by prolonged contact with water.

**Acid Precipitation** involves acidic water and porous minerals. This type of chemical weathering frequently occurs on gravestones, stone statues and building blocks made from porous rocks (Dissolving of rock due to something like acid rain).







# You try!

- |                                      |        |   |
|--------------------------------------|--------|---|
| ◆ A rock hitting another rock?       | C or P | P |
| ◆ A pot hole?                        | C or P | P |
| ◆ A rock with a red coloring?        | C or P | C |
| ◆ A bonfire?                         | C or P | C |
| ◆ A tree with roots in the bed rock? | C or P | P |
| ◆ Hitting a hammer on a rock?        | C or P | P |
| ◆ Putting a tooth in a cup of Pepsi? | C or P | C |

# Erosion

- ◆ The removal of weathered rocks by the action of:
  - Water
  - Wind
  - Ice
  - Gravity



# Agents of Erosion

1) **Gravity**



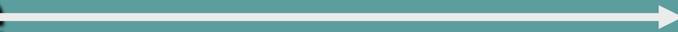
2) **Water**



3) **Wind**



4) **Ice**



# Water Erosion



# Grand Canyon



Strata



# Beach Erosion



# Wind Erosion

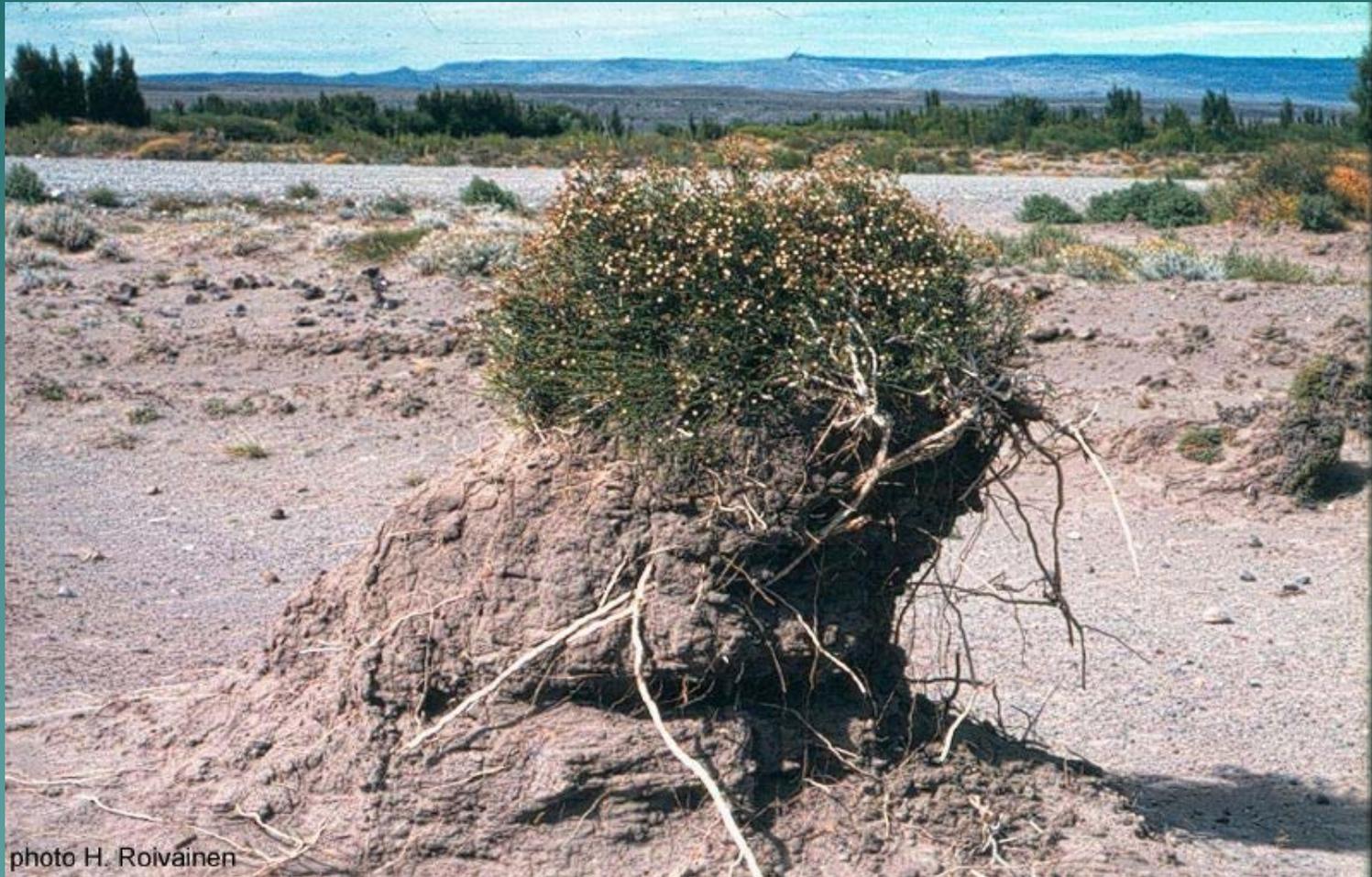


photo H. Roivainen

# Glacial Erosion



# Seashore Erosion



# Ice Erosion





# Gravitational Erosion





# Deposition

- ◆ This is like going to the bank geologically.
  - ◆ Weathering breaks the rocks up
  - ◆ Erosion moves the particles.
  - ◆ Deposition leaves the particles on the ground.
- 
- A stylized, teal-colored silhouette of a mountain range is located in the bottom right corner of the slide, partially overlapping the text area.

# Factors

- ◆ **Particle Size**
  - How big the sediments are.
- ◆ **Shape**
  - Round or flat
- ◆ **Density**
  - Weight and composition
- ◆ **Settling rates**
  - How fast things settle

# Ways to deposit

- ◆ **Glaciers**
- ◆ **Water**
- ◆ **Wind**
- ◆ **Mass movements  
(gravity)**

# Glaciers

Gravity moves the glaciers and sediment. Some have carved out the earth and created lakes and bays



# Water

**Streams,  
Rivers  
deposit  
sediment  
in sorted  
layers.**



# Wind



# Gravity

- ◆ Gravity alone does not sort sediment
- ◆ Landslides are the main form of gravity deposition.



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