

# Daily Routine

- Sit in your appropriate seat quietly
- Have all necessary materials out
- All back packs on the floor
- All cell phones on silent and away in backpacks
- All iPods off and headphones out of your ears
- Hats off
- No food or drink except for water

# Bell Work

- Compare and contrast felsic and mafic igneous rocks
- Compare and contrast extrusive and intrusive igneous rocks

# Earth Science Announcements

Mineral Quiz on Wednesday

# Igneous Rocks

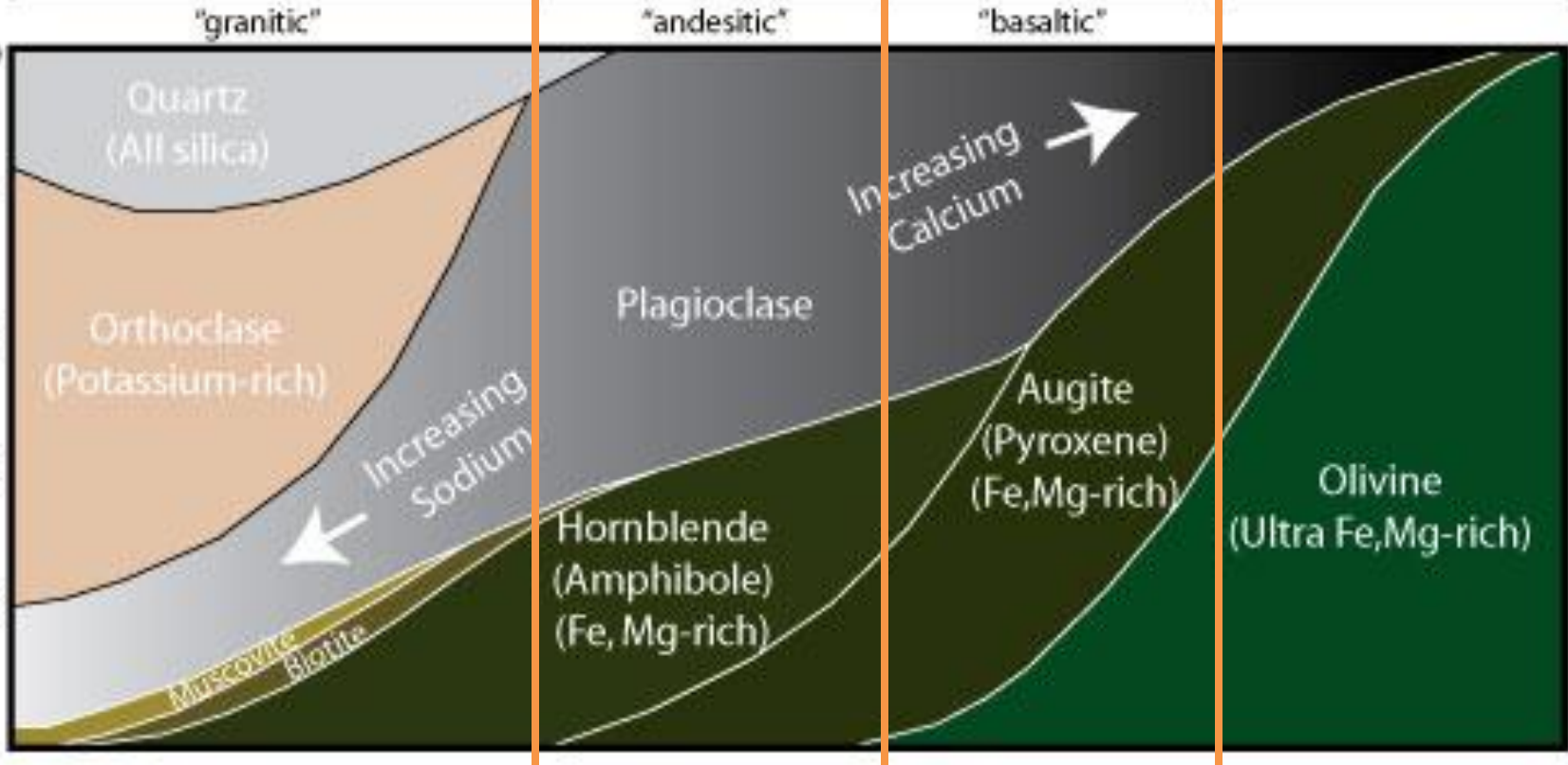
How are minerals affected by the different stages of the rock cycle?

I will be able to...

Extrusive (volcanic)

Intrusive (plutonic)

	FELSIC	INTERMEDIATE	MAFIC	ULTRAMAFIC
Extrusive (volcanic)	Rhyolite	Andesite	Basalt	Komatiite
Intrusive (plutonic)	Granite	Diorite	Gabbro	Peridotite



Important Trends

lighter in color  
 more silica (up to 75% of total)  
 more viscous magma  
 lower melting point (starts at about 200 C)

grayish in color

darker in color  
 less silica (down to 40% of total)  
 less viscous (more fluid) magma  
 higher melting point (starts at about 1200 C)

# Other Textures

- All extrusive features
- Glassy – looks like glass
- Vesicular – very jagged due to rapid release of gasses out of magma
- Porphyritic:
  - Magma cools for some crystal development
  - Erupted for majority of rock is fine grained



# Sedimentary Rocks



# How do sedimentary rocks form?

- Clastic Sedimentary Rocks
- From the abundant deposits of loose rocks and soil (sediments)
- Large grained – form due to high energy flows and long periods of quiet and compaction
- Medium and fine grained – settling out of wind and stream erosion



Texture (grain size)		Sediment Name	Rock Name
Coarse (over 2 mm)		Gravel (rounded fragments)	Conglomerate
		Gravel (angular fragments)	Breccia
Medium (1/16 to 2 mm)		Sand	Sandstone
Fine (1/16 to 1/256 mm)		Mud	Siltstone
Very Fine (less than 1/256)		Mud	Shale

# How do sedimentary rocks form?

- Chemical Sedimentary Rocks
- Form when dissolved minerals precipitate out of a solution when evaporation occurs
- Aka – evaporites
- Bio-chemical Sed Rocks
- Form with combination of evaporites and animal remains
- Form the compaction of dead decomposing organic matter.



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# Bell Work

- Describe what a porphyritic texture is.
- What are the three types/groups of sedimentary rocks?

# Earth Science Announcements

Mineral Quiz on Wednesday

# Sedimentary Rocks

# What is weathering?

- the mechanical and chemical processes that break down rocks into small pieces
- IT IS NOT INTERCHANGABLE WITH EROSION
- Two types of weathering
  - Mechanical
  - Chemical



# What is Mechanical Weathering?

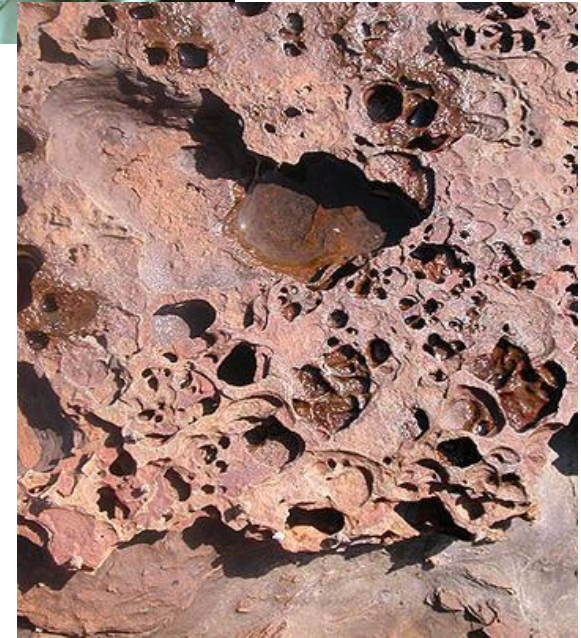
- Mechanical weathering breaks rocks along weak zones or cracks.





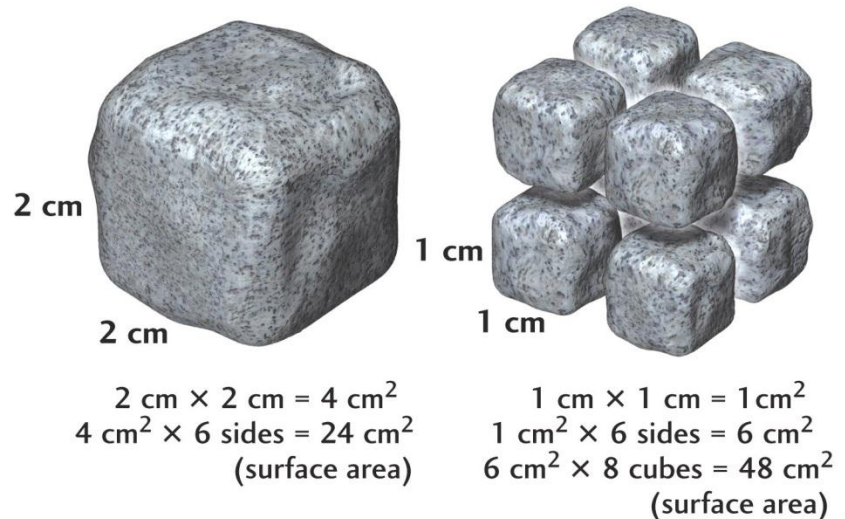
# What is Chemical Weathering?

- Chemical weathering is chemical reactions that break down rock, which are mainly caused by two things, air and water
- Types of Chemical Weathering
  - Oxidation (Rusting)
  - Acid Reaction (Carbonation, chelation)



# What things affect the rate of weathering?

- Surface Area (little pieces have more surface area)
- Climate
- Water availability
- Chemical composition
- TIME

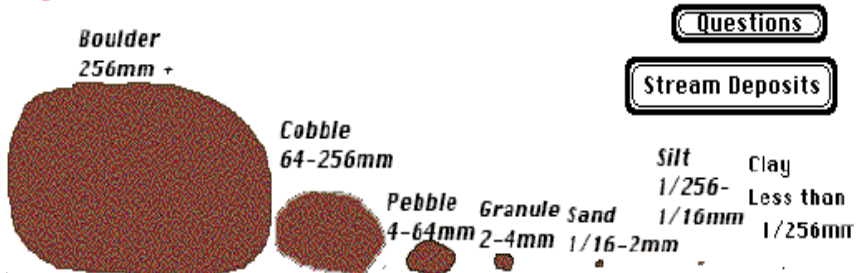


# What are the two things formed by weathering rocks?

- Sediments: naturally occurring material that is broken down by processes of weathering, and is subsequently transported by the action of wind, water, or ice
- Soils: is a natural body consisting of layers that are primarily composed of minerals mixed with at least some organic matter

## Sediment Size Chart

Diagram not drawn to scale



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# Bell Work

- What are the two types of weathering?
- What are sediments and soils?

# Erosion

How are minerals affected by the different stages of the rock cycle?

# I will be able to...

- Explain the difference between weathering and erosion
- Compare mechanical and chemical weathering
- Describe what are the products of weathering
- Explain how different factors affect rates of weathering

# Erosion is:

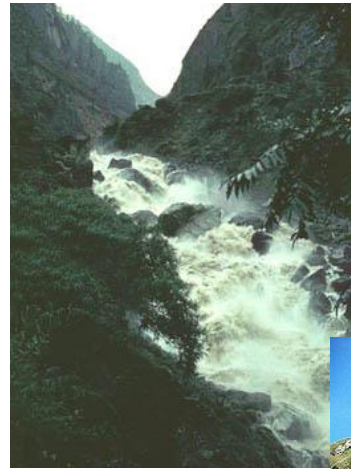
- The process by which water, ice, wind or gravity moves and transport fragments of rock and soil.





# Types of water erosion

- River/stream



- Wave (Ocean or Lake)

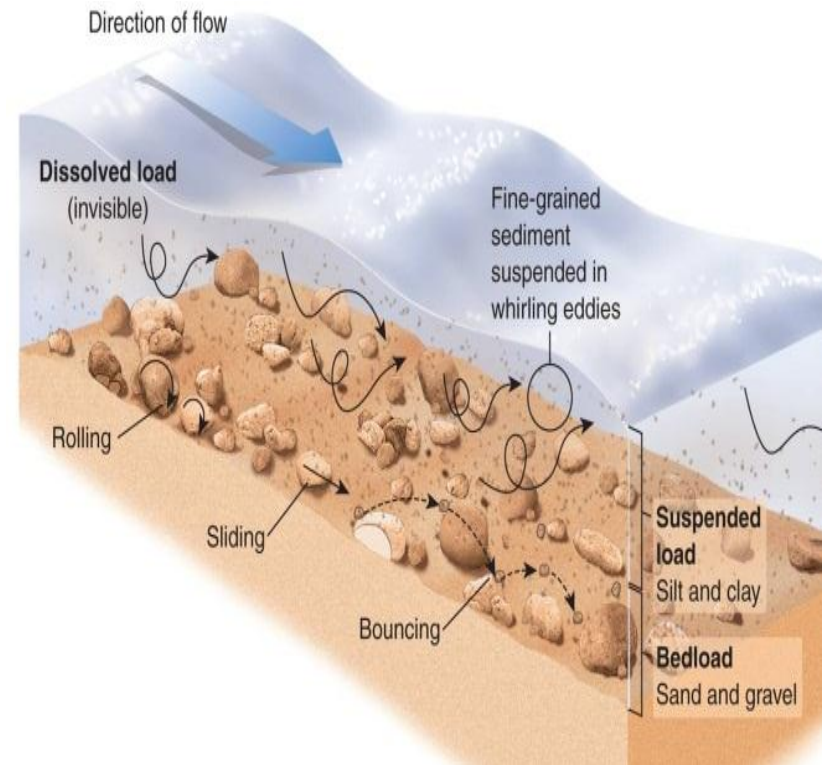


- Flooding/runoff

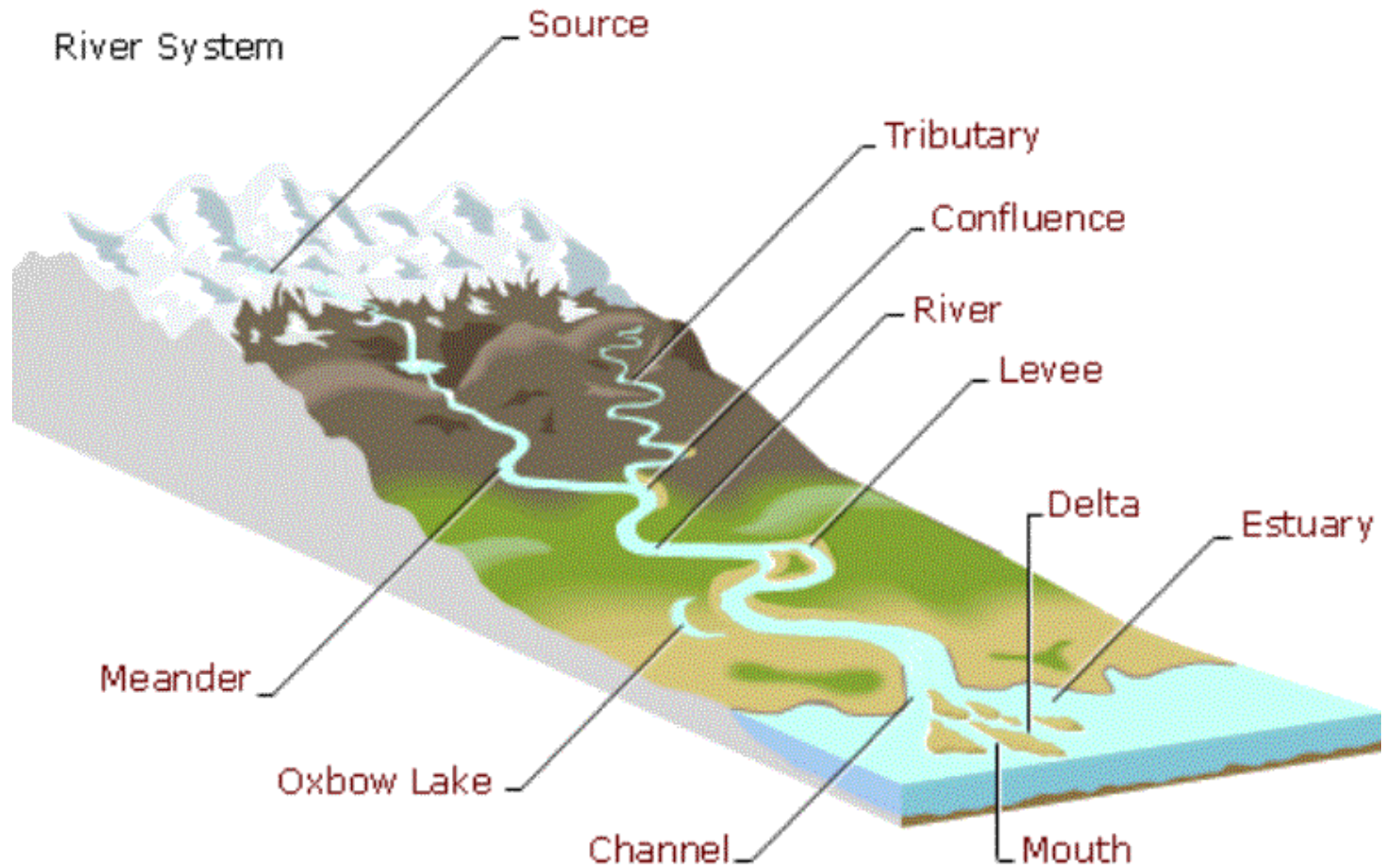


# Water Erosion

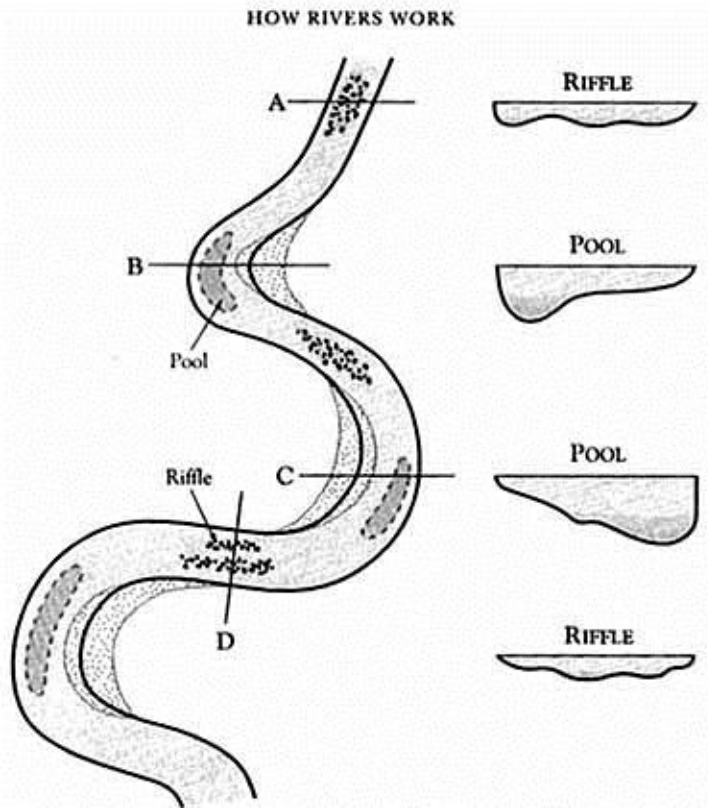
- Bedload creeps, slides, or bounces (saltation)
- Small sediment are suspended or float with current
- Some minerals are dissolved in water (halite)



# Water Erosion



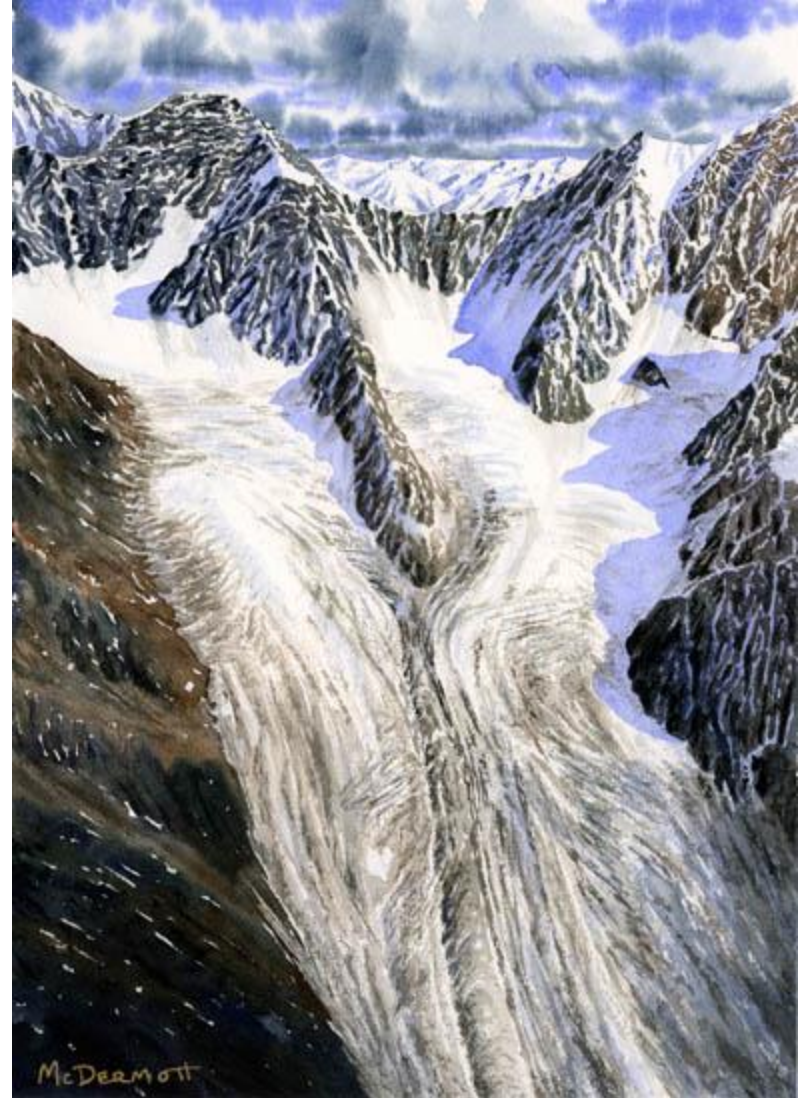
# Water Erosion



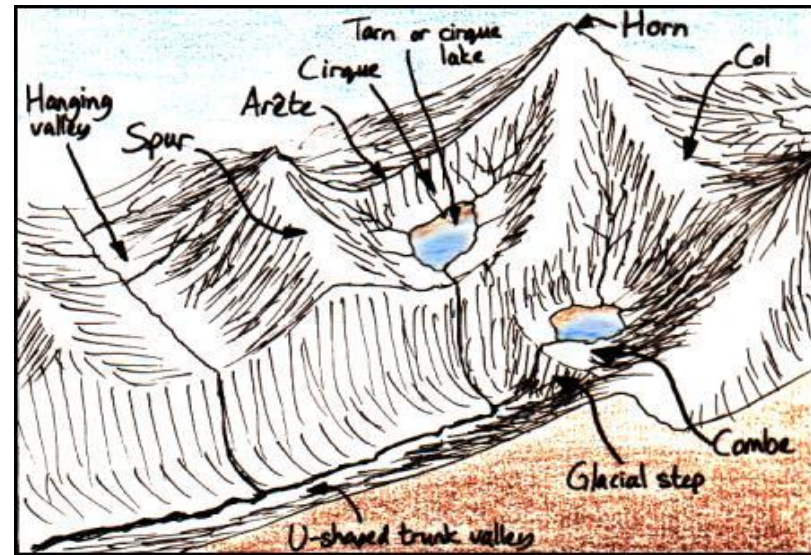
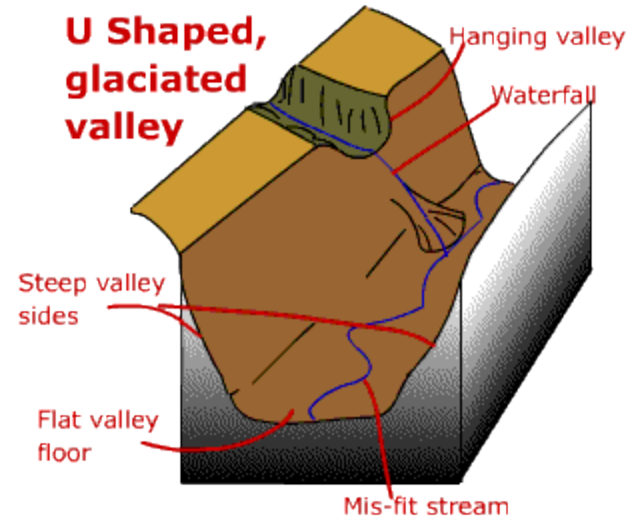
- Point Bar – deposition; river currents move slow and drop sediments
- Cut bank – Erosion; current moving quickly and transporting sediments

# Ice Erosion

- Glaciers



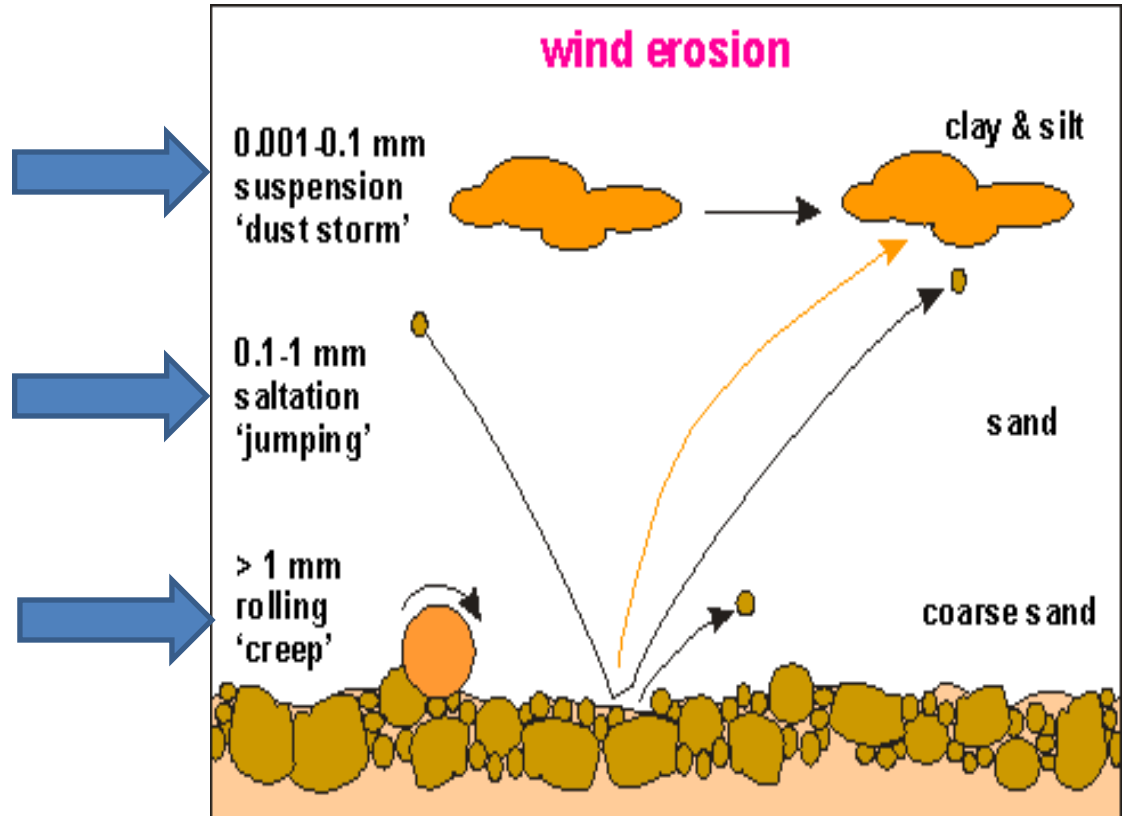
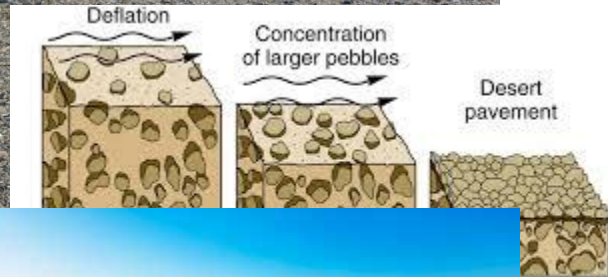
# Glacier Erosion



# Wind Erosion



# Wind Erosion





# Gravity – Mass Movements

- Landslides, mudslides, slump and creep



[landslide clip.mpeg](#)

# What affects rates of erosion

- Slope of surface
- Amount of water
- Speed of eroding agent
- Sediment size
- Amount of vegetation
- Time

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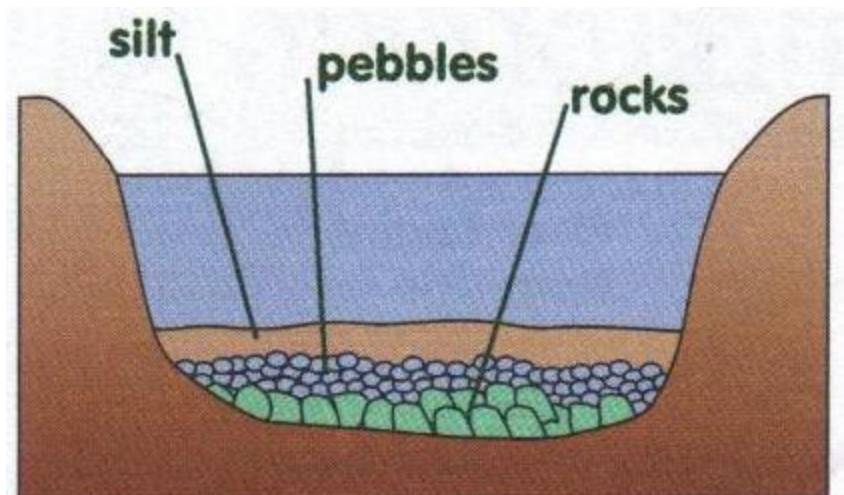
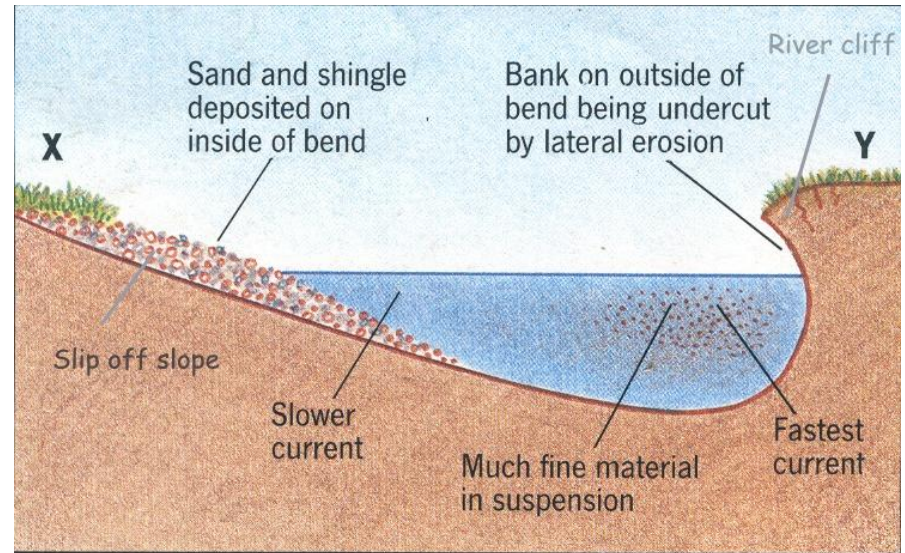
- What is erosion, and how do sediments and soils get eroded?
- What affects rate of erosion?

# Other Sedimentary Rock Terminology

How are minerals affected by the different stages of the rock cycle?

# What is Deposition?

- process by which, sediments, soil, and rocks settle out and are added to a landform or land mass after being eroded or transported by wind, water, or ice



# What is lithification?

- the consolidation of a loosely deposited sediment into a hard sedimentary rock through
- compaction - squishing sediments together
- cementation - using a mineral to stick sediments together

