# WELCOME BACK

Time for some more... you guessed it. ROCKS! Wahooo!

#### Formation of Sedimentary Rocks

- Sedimentary rocks account for approximately 5% of the crust. The upper 16 km of Earth.
- Regardless of this low percentage, approximately 75% of all rocks exposed at the surface is sedimentary rock.
- Factors leading to the formation of sedimentary rocks include:
- 1) Erosion and Weathering
- 3) Deposition

- 2) Transportation
- 4) Lithification

## 1) Erosion and Weathering

- In reference to the Rock Cycle, the origin of sedimentary rocks begins with the processes of weathering and erosion.
- Pre-existing rocks can be broken down both mechanically or chemically to produce sediment.
- A) <u>Mechanical Weathering</u> happens when a material is broken into smaller pieces which still retain the characteristics of the original material. Example: freeze – thaw action.

Water freezing cracks fragments of rock



#### B) <u>Chemical Weathering</u> happens when a material is altered by chemical action and a new material is produced which is chemically different than the original material.

Examples: Oxidation reactions - Iron rusting Decomposition of limestone (statues and headstones)

### 2) Transportation of Sediment

- Erosional agents (such as, water, wind, and ice), influenced by gravity, *transport* the sediment to new locations where it is deposited.
- Sediment is broken down further during the transport phase.
- Three main agents tend to transport the sediment, are:

#### 1) Water (rivers and groundwater)



2) Ice (glaciers)





### 3) Deposition of Sediment

 Eventually the sediment is *deposited* in lakes, river valleys, seas, and more frequently the oceans.



 In dry areas of the world, sediment (sand and silt) can accumulate in areas called deserts.

## 4) Lithification of Sediment

- Following deposition, sediment may become *lithified*, which means turned to solid rock.
- Sediment is commonly lithified by <u>two processes</u>:
- 1. Compaction:

when the sediment size is small (silt and clay), the weight from the layers of sediment above can compact the lower layers forming solid sedimentary rock.

Silt and Clay





Shale

#### 2) Cementation:

Over long period of time mineral matter within groundwater can cement (stick) sediment particles together to form solid sedimentary rock.

Sediment Particles —



Cement