

Erosion

- Erosion- Removes particles produced by weathering
- Erosive agents: Water, ice, wind, gravity

Transport

- Transport - Material carried away/downhill
- Transport Agents: water, ice, wind, gravity
- Transport Capacity: ability of agent to move material

Transport: rounding, and size reduction

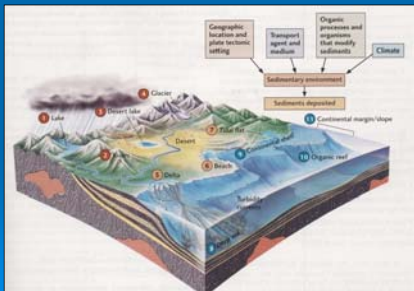
Distance of transport: Short → Moderate → Long

Larger, more angular → Smaller, more rounded

Transport: sorting

Well Sorted Poorly Sorted

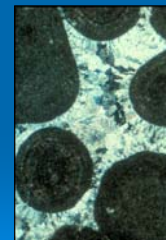
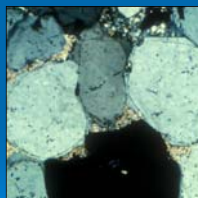
- Deposition- process by which sedimentary particles or crystals are laid down in beds.
 - Can be subaerial or subaqueous



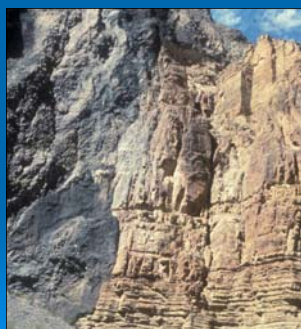
Sedimentary Deposits

Clastic/grains

Chemical/ Crystals



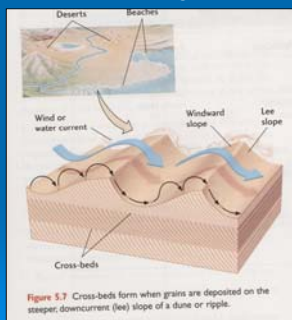
Sedimentary Bedding



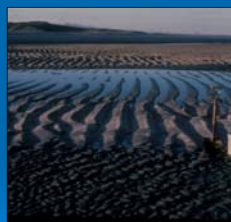
Sedimentary Structures: Cross bedding



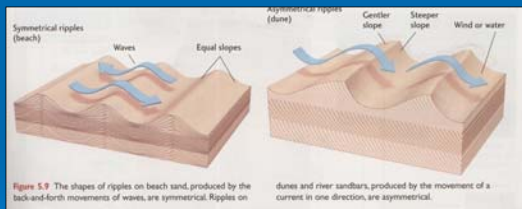
Sedimentary Structures: Cross bedding formation



Sedimentary Structures: Ripple marks



Sedimentary Structures: Ripple marks



Sedimentary Structures: Mudcracks



Sedimentary Structures: Raindrop imprints



Fossils- remains of organisms

Body Fossils



Trace Fossils



Trace Fossil: Bioturbation



Lithification

- Lithification- process of turning sediments (loose grains or crystals) into stone
- Occurs by increased pressure and temperature during diagenesis

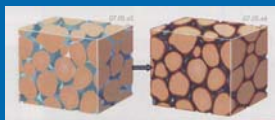
Diagenesis

- Diagenesis- changes that happen to sediments after deposition

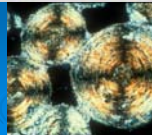
Physical changes- compaction



Chemical changes- cementation



Biological changes- decomposition



Classification of Clastic (detrital) Sedimentary Rocks (grain size and texture)

Textural Class	Sediment Name	Rock Name	Grain Size
Gravel	Boulder	Conglomerate	> 256
	Cobble	Breccia (rounded clasts)	256-64 mm
	Pebble	Breccia (angular clasts)	64-4 mm
	Granule		4-2 mm
Sand	Very coarse sand	Very coarse sandstone	2-1 mm
	Coarse sand	Coarse sandstone	1-1/2 mm
	Medium sand	Medium sandstone	1/2-1/4 mm
	Fine sand	Fine sandstone	1/4-1/8 mm
	Very fine sand	Very fine sandstone	1/8-1/16 mm
Silt	Coarse silt	Coarse siltstone	1/16-1/32 mm
	Medium silt	Medium siltstone	1/32-1/64 mm
	Fine silt	Fine siltstone	1/64-1/128 mm
	Very fine silt	Very fine siltstone	1/128-1/256 mm
Clay	Clay	< 1/256	

Clastic (detrital) Sedimentary Rocks



Grain Size	Composition	Rock Name
granule, pebble, cobble, or boulder size (>2 mm)	predominantly rock fragments	Conglomerate (rounded clasts) Breccia (angular clasts)
sand size (0.062-2 mm)	predominantly quartz grains, may contain feldspars, micas, and rock fragments	Sandstone
silt size (0.004-0.062 mm)	quartz grains, clays	Siltstone
clay size (<0.004 mm)	clays, some quartz	Shale (has fissility) Mudstone (lacks fissility)

Classification of Chemical Sedimentary Rocks (Composition Minerals)

Sediment	Rock	Chemical Composition	Minerals
BIOLOGICAL Sand and mud (primarily bioclastic)	Limestone	Calcium carbonate (CaCO ₃)	Calcite (aragonite)
Siliceous sediment	Chert	Silica (SiO ₂)	Opal, chalcedony, quartz
Peat, organic matter	Organics	Carbon compounds; Carbon compounded with oxygen and hydrogen	(coal), (oil), (gas)
No primary sediment (formed by diagenesis)	Phosphorite	Calcium phosphate (Ca ₃ (PO ₄) ₂)	Apatite
CHEMICAL No primary sediment (formed by diagenesis)	Dolomite	Calcium magnesium carbonate (CaMg(CO ₃) ₂)	Dolomite
Iron oxide sediment	Iron formation	Iron silicate oxide (Fe ₂ O ₃); limonite, carbonate	Hematite, siderite
Evaporite sediment	Evaporite	Sodium chloride (NaCl); calcium sulfate (CaSO ₄)	Gypsum, anhydrite, halite, other salts

Chemical Sedimentary Rocks



Composition	Rock Name
megascopic fossils	Fossiliferous Limestone
microcrystalline calcite	Micrite Limestone
sand-sized calcite spheres	Oolitic Limestone
dolomite	Dolomite
halite	Rock Salt
gypsum	Rock Gypsum
microcrystalline quartz	Chert