

### Classification of Sedimentary Rocks

#### Detrital

made of solid sedimentary fragments (eg, mudstone, siltstone, sandstone, and conglomerate/breccia)

**Clastic** - mainly for detrital rocks with distinct sized fragments

#### Chemical

made of minerals taken into a solution and reprecipitated without help from organisms (eg, evaporites like rock salt and iron formations)

**Crystalline** - mainly for chemical rocks with interlocking crystals

#### Biochemical

made of minerals of which organisms played a role in turning to sediment (eg, limestone made of calcite from coral, chert made of a planktonic micro-organism)

**Bioclastic** - rocks with skeletal remains

### Sedimentary Rock Textures

Clastic Texture Particle Size	Sediment Name	Rock Name
Coarse (over 2mm)	Gravel (rounded particles)	Conglomerate Breccia
	Gravel (angular particles)	
Medium (1/16 to 2mm)	Sand (or Arkose if abundant feldspar is present)	Sandstone
Fine (1/256 to 1/16 mm)	Silt	Siltstone
Very fine (<1/256 mm)	Clay	Shale/ Mudstone

### Sedimentary Facies

Lateral view of sedimentary rock reflects changes in past environments.

Characteristics of each facies reflect the environment in which it formed.

Different sediments often accumulate next to one another at the same time.

The merging of many facies is usually a gradual transition.

### Sedimentary Glossary

**Sedimentary rock** - one of the 3 rock types formed by the accumulation and cementation of inorganic or organic particles.

### Sedimentary Environments

**Continental** - Dominated by **erosion** and **deposition** associated with streams; in frigid environments, glaciers can move large volumes and sizes of sediment; streams are a dominant factor in moving sediment; wind deposits are well sorted

**Transitional (shoreline)** - quiet water conditions may form *tidal flats*; higher energy water conditions tend to form beaches, spits, bars, and barrier islands; sheltered, *brackish water* conditions can form lagoons; deltas are common and form when river velocity slows at river/sea interface and sediment is deposited

**Marine** - Divided according to depth: *shallow*  $\leq 200\text{m}$  - may include land derived sediment, skeletal debris, and coral reef accumulation; *deep*  $> 200\text{m}$ : tiny skeletons rain down on sea floor and strong currents may move material from *continental shelf* to deeper environments

**Tidal flat** - shallow, muddy, part of shore

**Brackish water** - salinized freshwater

**Continental shelf** - part of a continent submerged under shallow water

### Sedimentary Rock Types

#### Biological Sediment

organic matter or **biochemically** produced materials (eg, limestone).

#### Chemical Sedimentary Rock

precipitates from a fluid (eg, rock salt),

**Siliciclastic** made of clasts (sediments or fragments) compacted and cemented together. (eg, sandstone, conglomerate); also called **detrital**

### Sedimentary Structures

**Strata beds** - Distinct layers of sedimentary rocks; formations include multiple individual strata

**Bedding planes** - horizontal cracks that separate strata

**Surface impressions** - mud cracks or trace fossils

**Graded beds** - rapid deposition through water; coarse settles first and progressively shrinks in grain size upward through a bed; commonly formed by turbidity currents

**Cross-bedding** - Inclined layers in relation to bed formed by movement.

**Ripple marks** - small waves of sand formed by moving water

**Current ripple marks** - stream currents (asymmetric)

**Oscillation ripple marks** - waves (symmetric)