

Sedimentary rocks and sedimentary processes:

There are two major types of sedimentary rocks: Clastic Sedimentary Rocks, Chemical Sedimentary Rocks. Weathering is the process that breakdown pre-existing rocks into sediments. Rivers, oceans, winds, and rain runoff all have the ability to carry the particles washed off of eroding rocks. Such material, called detritus, consists of fragments of rocks and minerals. When the energy of the transporting current is not strong enough to carry these particles, the particles drop out in the process of sedimentation. This type of sedimentary deposition is referred to as clastic sedimentation. Another type of sedimentary deposition occurs when material is dissolved in water, and chemically precipitates from the water. This type of sedimentation is referred to as chemical sedimentation.

In order for sediments to be part of sedimentary rock, they have to be transported, deposited and turned into sedimentary rock by a process called diagenesis. These are the three important process that transform sediments into sedimentary rock.

Transportation:

Sediment can be transported by sliding down slopes, being picked up by the wind, or by being carried by running water in streams, rivers, or ocean currents. The distance the sediment is transported and the energy of the transporting medium all leave clues in the final sediment that tell us something about the mode of transportation.

Deposition:

Sediment is deposited when the energy of the transporting medium becomes too low to continue the transport process. In other words, if the velocity of the transporting medium becomes too low to transport sediment, the sediment will fall out and become deposited. The final sediment thus reflects the energy of the transporting medium.

Diagenesis:

Diagenesis is the process that turns sediment into rock. The first stage of the process is compaction. Compaction occurs as the weight of the overlying material increases. Compaction forces the grains closer together, reducing pore space and eliminating some of the contained water. Some of this water may carry mineral components in solution, and these constituents may later precipitate as new minerals in the pore spaces. This causes cementation, which will then start to bind the individual particles together. Further compaction and burial may cause recrystallization of the minerals to make the rock even harder.