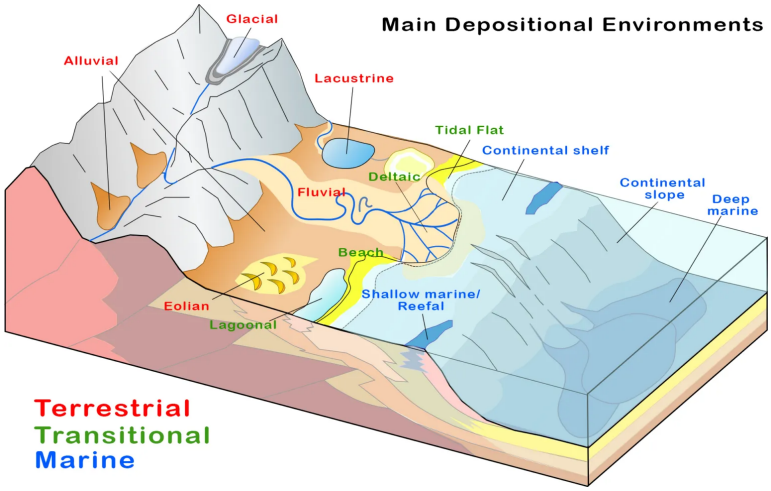
Earth Science Reviewer

Depositional Environments, Landforms, and Waterforms

Depositional environments are the combination of chemical, physical, and biological aspects that dictate what type of sediments, rock types, and landforms are deposited or formed.

Erosion is an important process in depositional environments. It is a geological process in which earth materials are weathered and transported. Erosional agents such as water, wind, ice, or animals and humans are responsible for transporting these materials.

These earth materials are then “added” to an environment or landform in a process called **deposition**. There are many types of depositional environments but they can be classified into three main types:



1. Terrestrial Environments.

Land and water forms in this type of environment can be found on land and usually involve freshwater. Here are some depositional environments that fall under this category:

- **Fluvial:** rivers and streams
- **Eolian:** deserts and arid environments
- **Alluvial:** mountainous environments
- **Glacial:** ice caps and glaciers

- **Lacustrine:** lakes

Associated landforms and waterforms:

- **Mountains** – These are elevated (more than 2,000 ft) areas of land, usually results of tectonic forces. **Hills** are similar to mountains but with lesser steepness (below 2,000 ft).
- **Plains** – These are relatively flat expanses of land that lie above sea level. Plains can occur between two mountains as a **valley**. A **plateau** is a plain that is relatively elevated than the surrounding land.
- **Desserts** – These are areas that receive little rainfall and have high rates of evaporation. Despite this, the most dominant agent of erosion in these areas is running water, followed by wind.
- **Glacial environments** – These are areas where the most dominant erosional agent is ice. Glaciers are large masses of moving ice over land. Ice sheets are also large masses of ice that cover an extensive area of land (more than 50,000 km^2).
- **Rivers** – Long bodies of water that originate from high elevation (such as mountains or hills) and flow down to lower elevation (such as plains, mountain slopes, etc.). Rivers are usually supplied with water from rainfall, melted ice, or from natural springs from underground in areas called **drainage basins**.

2. Transitional Environments.

Transitional environments represent the **interface between land and sea**. It is here where freshwater meets with seawater.

Here are some depositional environments that fall under transitional environments:

- **Beach:** where land meets the sea in shallow waters
- **Deltaic:** where the river flows into the sea; freshwater mixes with seawater
- **Tidal flat:** low-lying areas affected by tides
- **Lagoonal:** a small body of water closed off from a larger body of water (the ocean)

Associated landforms and waterforms:

- **Deltas** – These are areas at the end of the mouth of a river where freshwater mixes with seawater.
- **Wetlands** – These are areas that are near rivers or coastlines where soils are saturated or submerged in water. **Swamps** are wetlands where trees dominate the plant life. **Marshes** are wetlands where moss and soft-stemmed vegetation are most prominent.

3. Marine Environments.

These are environments that can be found in the open waters, from the shallow depths to the deepest portions of the ocean.

Here are examples of marine environments:

- **Shallow marine/reefal:** region where sunlight penetrates the water; high energy environment and teeming with life
- **Continental shelf:** extensions of continental crust submerged by water
- **Continental slope:** steep slope between the shallow continental shelf and the deep ocean basin
- **Deep marine:** region where sunlight does not reach; low energy environment

Associated landforms and waterforms:

- **Oceans –** These are large bodies of water that surround continents. **Seas** are smaller bodies of saltwater enclosed or partially enclosed by land and are connected to the ocean.
- **Atolls** – These are rings or partial rings of coral that usually form around a volcanic island or volcano that has receded or been eroded throughout time.
- **Guyots** – These are elevated platforms with flat tops formed by volcanic activity near the ocean floor. These can be massive and reach heights of up to more than 600 m. They are also known as **seamounts**.