**CHANGING EARTH**

**Learning Goals:**

* Major Landforms
* River basin
* Sea Arch
* Sand Dunes

We have studied in the previous chapter that the earth is a dynamic place i.e., it constantly undergoes changes. The landscape is continuously being worn away by two processes:

**Weathering:** It is the breaking up of rocks on the earth’s surface. It creates rock fragments.

**Erosion:** As mentioned earlier, it is the wearing away of landscape by different agents like wind, water and ice. The eroded material is carried away or transported by water, wind, etc. and eventually deposited.

Different landforms are created on the earth’s surface because of erosion and deposition.

**Role of water in erosion/ deposition**

**River**

The running water of the river erodes the landscape.

**Waterfall**

A waterfall is formed when the river tumbles at steep angle:

* over very hard rocks or
* down a steep valley side

**Ox Bow Lake**

As the river enters the plain, it twists and turns forming large bends called meanders. Due to continuous erosion and deposition along the sides of the meander, the ends of the meander loop come closer and closer. When this happens, over a course of time, the meander loop cuts off from the river and forms a cut – off lake. Such a lake is also called an ox-bow lake.



**Floodplain**

When the river overflows its banks, the neighbouring areas get flooded. When the river floods, it deposits layers of fine soil and other material called sediments along its banks. This leads to the formation of a floodplain. A floodplain is flat and fertile.

**Levees:** The raised banks of the river (due to overflowing) are called levees.

**Delta:** When the river approaches the sea, it becomes very slow in its flow and begins to break up into a number of streams called distributaries. The speed of the river water is so less that it starts depositing its load. Each distributary forms its own mouth. A collection of sediments from all the mouths forms a delta.

### Sea Waves

The erosion and deposition by water in the form of sea waves leads to the formation of coastal landforms. Some coastal landforms are as follows:

* Sea Caves
* Sea Arches
* Stacks
* Sea Cliff
* Beaches



Seawaves continuously strike at the rocks. This leads to cracks. The cracks become larger and wider overtime. Thus hollow like caves are formed on the rocks. They are called sea caves. As these cavities become bigger and bigger, only the roof of the caves remains, hence forming sea arches. The erosion further breaks the roof and only the walls remain. These wall-like features are called stacks. Sea cliff is the steep rocky coast rising almost vertically above sea water. The sea waves deposit sediments along the shores forming beaches.

#### Role of ice in erosion/ deposition

Glaciers are ‘rivers’ of ice that too erode the landscape by bulldozing soil and stones to expose the solid rock below. They create

* Deep hollows
* Lakes in mountains: These are formed when the ice melts and the deep hollows get filled up with water
* Glacial moraines: These are formed by the deposition of the material carried by the glacier such as rocks big and small, sand and silt.

##### Role of wind in erosion/ deposition

An active agent of erosion and deposition in the deserts is the wind. The landforms in the desert are

**Mushroom Rocks:** In deserts, we can see rocks in the shape of mushrooms called mushroom rocks. The mushroom has a narrow base and a wider top. These rocks also have such a shape because the winds erode the lower section of the rock more than the upper part.

**Sand Dunes:** When the wind blows, it lifts and transports sand from one place to another. When it stops blowing the sand falls and gets deposited in low hill – like structures called sand dunes.

**Loess:** When the grains of sand are very fine and light, the wind can carry it over very long distances. When such sand is deposited in large areas, it is called loess. Large deposit of loess is found in China.

##### Keywords:

**Seismograph:** It is a machine used to measure earthquakes.

**Richter Scale:** The scale used to measure the magnitude of the earth quake.

##### Do You Know?

* P waves are the primary waves. They are able to travel both through solid rock and liquid materials. The S wave is the secondary wave. It is a slower wave and it cannot propagate in the liquid parts of the earth such as oceans, lakes etc. The motion of the L waves / surface waves is restricted to near the ground surface.
* An earthquake of 2.0 or less on the Richter scale can be felt only a little. An earthquake of over 5.0 can cause some damage from things falling. A 6.0 or higher magnitude is considered very strong whereas 7.0 is a major earthquake causing mass devastation.
* There are thousands of small waterfalls in the world. The highest waterfall is Angel Falls in South America. The other waterfalls are Niagara Falls and Victoria Falls.
* The following rivers in our country form a delta - Godavari, Krishna, Narmada, Cauvery etc.