

## Erosion and Deposition - Rivers



The Earth can be shaped by the action of water in rivers and at coasts. The main processes are called erosion, transportation and deposition.

**Erosion** = when rocks and soil are worn away, which puts lots of sand, mud, pebbles and silt into the river.

**Transportation** = the moving of the eroded material. The force of the flowing water moves the mud, sand, pebbles and silt created by erosion.

**Deposition** = the dumping of material. The sand, mud, pebbles and silt being transported by the river is eventually dropped as the river slows.

### Key Vocabulary

**erosion:** the wearing away of rocks

**transportation:** the movement of rocks

**deposition:** the dumping of rocks  
**youthful:** a river near its source

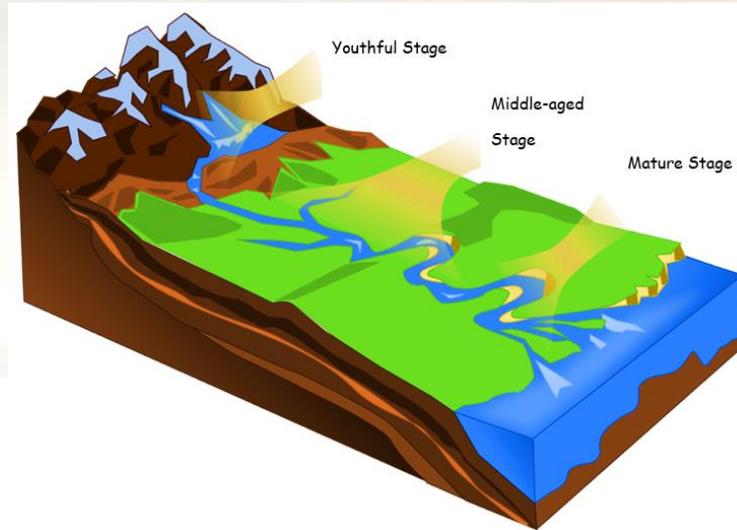
**middle-aged:** a river downstream from its source

**mature:** a river near its mouth

**meanders:** bends and changes to direction in a river

**ox-bow lakes:** parts of a meander cut off from the rest of a river

**delta:** where a river splits and spreads out into several branches before entering the sea



A river has three main stages: youthful, near the source; middle-aged, further downstream and mature, near the mouth. Different types of erosion and deposition happen at each stage.

At the youthful stage, the mountains or hills are steep and the river is fast flowing. The direction of erosion is

downwards in the river bed which forms a v-shaped valley. As the river is fast flowing there is very little deposition.

At the middle-aged stage, the river starts to slow down and the erosion is to both the river bed and the banks of the river. This causes the river to widen and to bend and twist, forming meanders and, sometimes, ox-bow lakes. Deposition of silt happens at the sides of the banks of the river as they are usually not as deep as the centre of the channel.

In the mature stage, the river is much wider because the land is flatter and so the river is much slower. This leads to erosion mostly to the banks and little or no erosion to the river bed. After heavy rain or melting snow, the river can flood at this stage. Although this is dangerous, the deposition brings nutrients which is good for agriculture. A delta is sometimes formed where a river meets the sea. This is formed because the river slows down quickly when it meets the sea and deposition happens quickly. Sometimes rivers flood at the mature stage which speeds the deposits on the soils which makes it very fertile and good for growing crops.

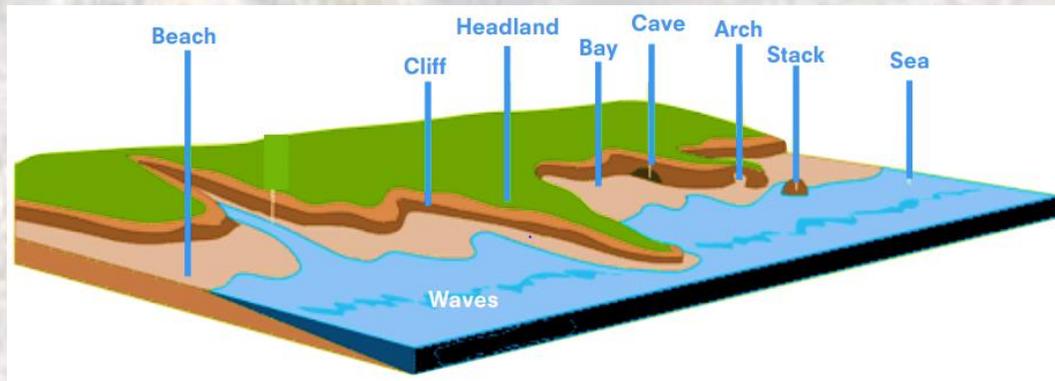
## Erosion and Deposition - Coasts



The surface of the Earth is completely covered in rock. Coasts are where the land meets the oceans or sea. Some of the geographic features that are found there are beaches, cliffs, arches, stacks, headlands and bays. These features are formed through the processes of erosion and

deposition. Coasts are also tourist destinations where people sunbathe on the beach, paddle in the sea and explore rock pools and caves.

**Waves** are formed when wind blows over the seas or oceans. The force of the waves erodes the land. Waves erode softer areas of rock, which forms **caves**, short tunnels into a cliff. Waves also erode larger areas of the land which forms **bays**. The edges of the bay, where the land sticks out are called **headlands**. When a cave forms in a headland it sometimes gets so large that it forms an **arch**. When the roof of an arch collapses it forms a **stack**. **Cliffs** are rocks that are very hard and not easily worn away by the sea. Waves also deposit the materials they erode. This forms **beaches**.



### Key Vocabulary

**tourist destinations:** places to visit for a holiday

## Erosion and Deposition - Management



Erosion is a natural physical process that shapes cliffs. Over time, erosion can cause cliffs to collapse and so the coastline needs to be managed. This is done by engineers building artificial structures which try to control natural processes.



**Sea walls** are concrete walls that are placed at the bottom of a cliff to prevent erosion. Their advantages are that they are effective at protecting the cliff and they usually have a promenade so people can walk along them. Their disadvantages are that waves can eventually erode the sea wall and they are very expensive to build - approximately £2000 per metre.



**Rock armour** is large boulders placed at the bottom of a cliff to protect it. The advantages of rock armour are that it is cheaper than a sea wall and easy to maintain. The disadvantages are that the rocks are expensive to transport and look different from the natural cliff.



**Groynes** are wooden or rock structures built out into the sea. Their advantages are that they form a beach - which encourages tourism. Their disadvantage is that they look unattractive.



The **Holderness coastline** is located on the east coast of England. It is the fastest eroding coastline in Europe. There are two main reasons why it is eroding so quickly: the cliffs are made of soft clay and there are powerful waves along the coast. Sea walls, rock armour and groynes are used at various places along this coastline.

### Key Vocabulary

**natural physical process:** something that happens in nature and is not caused by people  
**artificial structures:** things built by people  
**advantages:** positive or good things  
**disadvantages:** negative or bad things  
**prevent:** to stop something happening  
**promenade:** a path by the sea  
**boulders:** large rocks  
**maintain:** to look after or repair something