



Driving Question: How can we help find solutions to water problems around the world?

Power Skill: Communication - I can communicate through presentations and incorporate feedback from others

National Curriculum Learning Objectives

- describe and understand key aspects of physical geography, including: rivers, mountains and the water cycle

Key Vocabulary

erosion	deposition	meander	evaporation	condensation
precipitation	collection			

Key Learning

Rivers

A river is a flowing, moving stream of water. Usually, a river feeds water into an ocean, lake, pond, or even another river. Rivers can vary in size and there is no hard definition or rule on how big a flow of water must be to be categorised as a river.

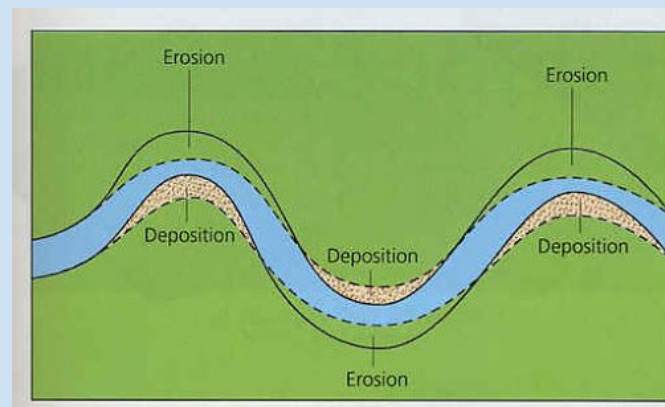
The Upper Course:

In the upper course, precipitation feeds the emerging river. Rivers typically start on high land. The point where a river starts is called the source. The river in the upper course flows through steep gradients and flows quickly. Because of the steep gradients and fast flow of the water, waterfalls often form in the upper course of a river.

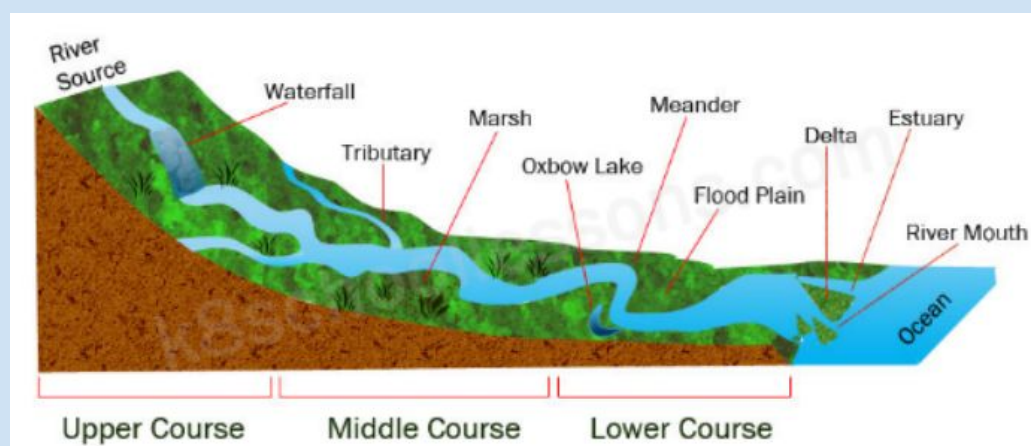
The Middle Course:

In the middle course, rivers become wider and deeper. While the water is less turbulent than in the upper course, the water is actually moving with greater speed. With a wider river bed and deeper water there is also less friction. As such, the river has a greater energy to erode the river bank. In the middle course, the shape of the river is under constant change. The moving water erodes, transports and deposits soil and other material to determine the shape and size of the river – they are constantly changing because of the following:

- Erosion:** Occurs on the outside of the meander (bend) where the water is moving at its fastest. This will cause a deeper channel to be formed and so the water on the outside of a meander (bend) will be deeper than on the inside.
- Deposition:** This occurs where water lacks the energy to transport the load it is carrying so the rocks/stones are deposited/left in place. In the middle course, this happens on the inside of a bend or meander, where the water flows slowly.
- Meanders:** Because of these processes, meanders are created. The continuous flow of water and constant process of erosion, transportation and deposition, will result in areas of faster and slower moving water and the river will gradually begin to flow a more winding course.



The Lower Course: In the lower course of the river, the land is flatter and the river wider. The water is at its deepest in the lower course. Many rivers have estuaries, which are characterised by wide, flat land where the river flows into the sea. This is known as the mouth of the river.



Thinking Point

How do you think the living things in the river vary, depending on which part of the river they are in?



Fieldwork

Investigate meanders: either through exploring a river in the local area, or by creating a river model using a sand tray and a hose pipe.

Resources:

Atlases,

Key Learning

The Water Cycle:

Earth has been recycling water for over 4 billion years! The world's water moves between lakes, rivers, oceans, the atmosphere and the land in an ongoing cycle called the water cycle. As it goes through this continuous system, it can be a liquid (water), a gas (vapour) or a solid (ice).

There are 4 stages of the water cycle which continuously repeats:

1. Evaporation:

Energy from the Sun heats up the surface of the Earth, causing the temperature of the water in our rivers, lakes and oceans to rise. When this happens, some of the water evaporates into the air/atmosphere, turning into a gas called vapour.

2. Condensation: As water vapour rises up high into the sky, it cools and turns back into a liquid, forming clouds. This process is called condensation. Air currents high up in the air move these clouds around the globe. Depending on the temperature and how quickly the vapour condenses or sometimes freezes, the vapour can turn to rain, sleet, hail or snow.

3. Precipitation: When too much water has condensed, the water droplets in the clouds become too big and heavy for the air to hold them. They fall back down to Earth as rain, snow, hail or sleet, a process known as precipitation.

4. Collection: The fallen precipitation is then collected in bodies of water – such as rivers, lakes and oceans – from where it will eventually evaporate back into the air, beginning the cycle all over again.

How it is collected, depends on where it lands:

- Some will fall directly into lakes, rivers or the sea, from where it will evaporate and begin the cycle all over again.
- If the water falls on vegetation, it may evaporate from leaves back into the air, or trickle down into the ground. Some of this water may then be taken up by the plant roots in the earth.
- In cold climates, the precipitation may build up on land as snow, ice or glaciers. If temperatures rise, the ice will melt to liquid water and then soak into the ground, or flow into rivers or the ocean.
- Water that reaches land directly may flow across the ground and collect in the oceans, rivers or lakes. This water is called surface runoff.
- Some of the precipitation will instead soak or infiltrate into the soil, from where it will slowly move through the ground until eventually reaching a river or the ocean. This is called throughflow.



Thinking Point

Do you think there is ever 'new' water?

