Year 5 Geography – Rivers and the Water Cycle

Knowledge Organiser

What have we learnt in this topic before and what we will learn this year?

In Year 2, the children would have learnt about the different continents of the world and the oceans around them. We continue this by looking at how rivers flow to the seas and oceans.

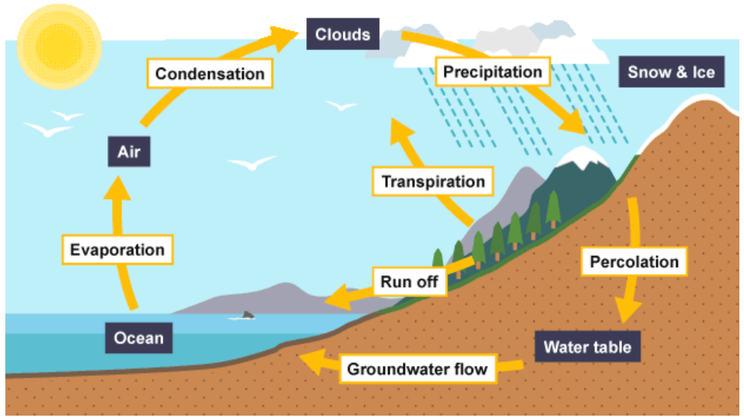
In Year 3, they would have studied rocks and soils in Science and this will support the idea of permeable and impermeable rocks and links to flooding.

In Year 5 we will be studying Rivers and the water cycle processes. We look at how rivers are formed through their processes, the risks associated with flooding and ways of preventing such things. There's a chance to look at some of the world's most famous rivers and locate them on a map.

We will also conduct a case study of flooding here in the UK and compare it to that of another country around the world. We will be able to talk about how an area may look in the future because of physical and human changes.

THE HYDROLOGICAL CYCLE

The global hydrological cycle is powered by solar energy. It is a closed system, in **continual** circulation. This means that there is a **definite** amount of water in the system and that this amount does not change. 97% of the Earth's water is within our oceans and 2% in the glaciers and ice caps. This means that only 1% of the Earth's water is in circulation at any one time.



CASE STUDY - BOSCASTLE FLOODS

Causes - There was a spell of heavy localised rainfall - 89 mm of rain fell in an hour on saturated ground from previous rainfall. The landscape upstream of Boscastle, a steep-sided valley, acted as a funnel directing vast volumes of water into the village.

What has been done to help prevent further flooding?

- £4.5 million has been spent on a flood defence scheme.
- The scheme incorporates drainage, sewerage systems and land re-grading.
- Boscastle car park has been raised in height, which will stop the river from bursting its banks so easily.
- New drains allow water to run into the lower section of the river quickly.
- The river channel has been made deeper and wider so that it can accommodate more water.

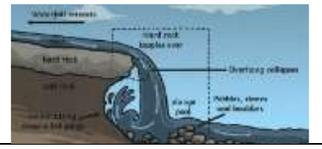
RIVER PROCESSES

The processes of river explain how rivers and bodies of water are created or change.

Erosion - where rocks are worn away and the land changes shape.

Transportation - where eroded material is carried by the river downstream.

Deposition - where transported material is dropped when the river loses energy, such as when it enters the sea.



RIVER COURSES

The Upper Course
Rain falling on high ground collects in channels and flows downwards forming a stream. Streams run downhill and join other streams, increasing in size and speed, forming a river. The river here flows quickly and the channel has steep sides and runs through valleys.
Features include – waterfalls and rapids.

The Middle Course
Fast flowing water causes erosion making the river deeper and wider. Features include - meanders.

The Lower Course
Rivers flow with less force due to being on flat land. The river deposits the eroded material that it has carried. Riverbanks have shallower sides.
Features include - floodplains, deltas and estuaries.

FLOODING

A flood occurs whenever a river overflows its banks. However, a flood becomes a problem when the water rises to a level where it threatens property and/or life. Rivers usually flood due to a range of physical factors.

These physical factors can be divided into climatic factors and drainage basin characteristics. Precipitation (or heavy rainfall) can cause large volumes of water to fall which increases the likelihood that an area will flood. Soils and rocks can only hold so much water and once they are full, the excess water, called surface run-off, flows into rivers causing an increase in water volume. Flooding can also be caused by areas of land without vegetation (plants and trees) as there is less to absorb excess water. Finally, steep sided valleys and drainage basins will return water to the rivers too quickly and as a result, they cannot hold the volume of water required, resulting in flooding.

Human intervention can also make flooding worse. These could include the effects of global warming and fossil fuels, urban growth as humans continue to develop the modern world, deforestation and removal of vital vegetation and the river management strategies to narrow some areas and direct water unnaturally from it's course.

Key Vocabulary

cause source effect mouth profile drainage response deposition watershed erosion oxbow lake valley floodplain meander v-shaped valley