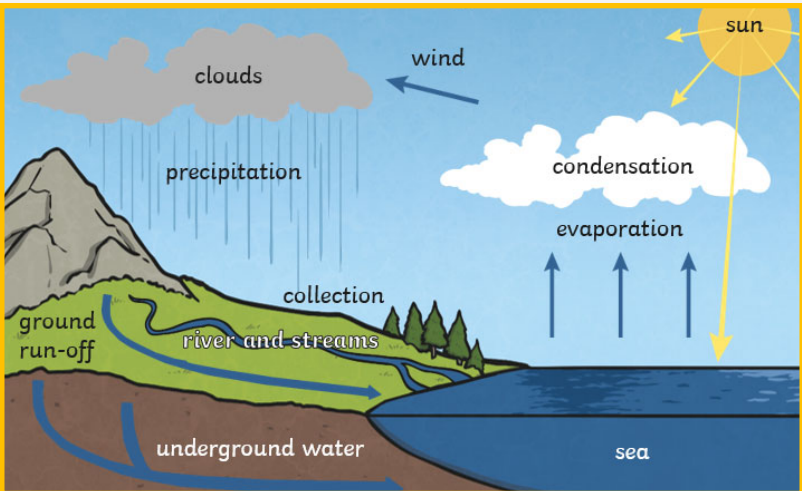


Why does it rain?



How do rivers change from source to mouth?

Upper Course

The source of the river is in the upper course. This is usually high up in the mountains and where there is a lot of rain.

- Characteristics**—The river valley is a steep V shape, the gradient of the river is steep and the cross-profile is narrow and shallow.
- Processes**—The river has lots of energy and erosion is the most dominant process.
- Landforms** —You can find waterfalls in the upper course.

Middle Course

As the river moves into the middle course, there is a little less rainfall and the height above sea level reduces.

- Characteristics**—The river valley becomes wider and the gradient is more gentle. The cross-profile of the river becomes wider and deeper too.
- Processes**— Both erosion and deposition occur here. The bed load is also transported from the upper course to lower course.
- Landforms**—You can find meanders in the middle course.

Lower Course

The final course of the river is the lower course, here the river reaches the sea. The end of the river is called the mouth.

- Characteristics**— The river valley is very wide and flat. The gradient is very gentle. The river’s cross profile is at its deepest and widest.
- Processes**—Deposition is the most dominant process here as the river loses energy.
- Landforms**—You can find meanders and where the river meets the sea, known as the mouth.

Key Words

Erosion	The wearing away of material e.g. rocks.
Transportation	The movement of material e.g. rocks and sand.
Deposition	The dropping of material due to a lack of energy .
Long profile	A diagram showing a line representing the river’s gradient from its source (start) to its mouth (end).
Cross profile	A diagram showing how wide and deep the river channel at certain points along its journey.
River valley	The land either side of the river channel.
River channel	The outline path of land which the river flows in.
Flood	When the river can no longer hold any more water and it spills over its banks.
Process	A series of actions or steps that achieve a result or make a change.
Bed load	The rocks and sand carried by the river.

How can we prevent flooding?

Why do rivers flood?

Natural causes—a steep sided valley and heavy rainfall (this means water runs down the hill too quickly into a river).

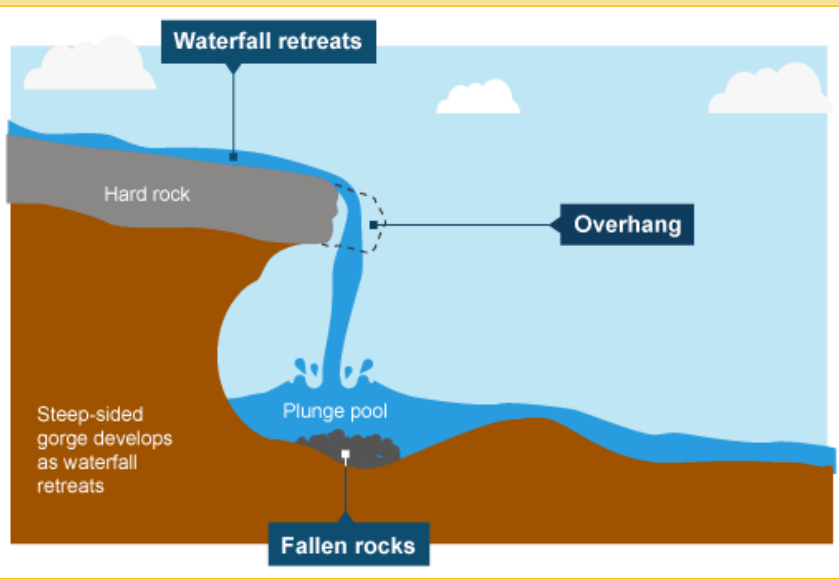
Human causes— deforestation and the increase in urban areas (towns and cities) with impermeable surfaces (this means water can’t soak through and runs off straight into the river).

How can we stop flooding?

- We can increase the capacity of the river by building river walls. River walls have been built in Todmorden to reduce the risk of flooding on the River Calder.
- We can plant trees in the river valley. This is called **afforestation**. Trees will intercept the rain with their leaves and soak it up with their roots, therefore slow the flow of the water into the river.

What landforms do rivers create?

Waterfalls: Form in the upper course. Created by erosion.



Meanders: Form in the middle and lower course. Created by erosion and deposition.

