Geography

KNOWLEDGE ORGANISER YEAR 8

St Ivo School Geography Department

www.geobytes.org.uk

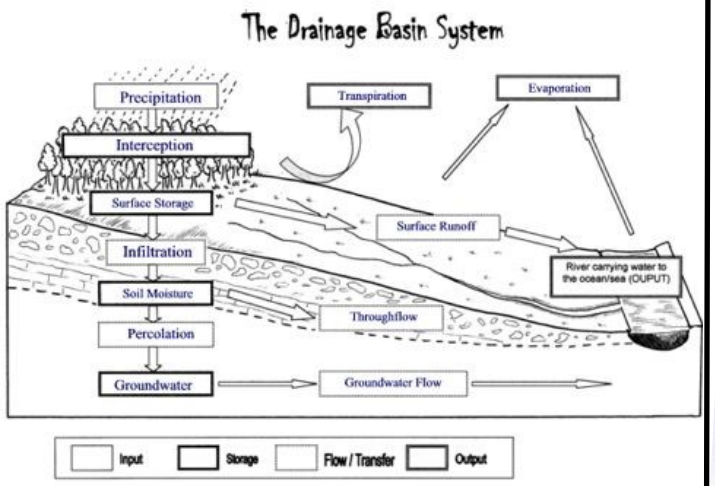
# RIVER LANDSCAPES

## 1. Why are rivers Important?

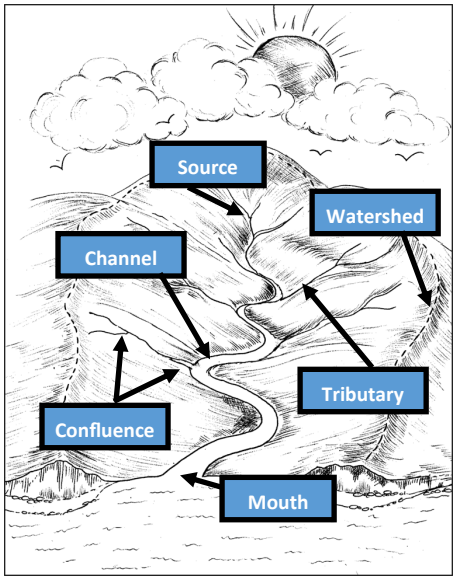
Rivers are important because they **shape the landscape, supply us with water**, influence the location of settlements and provide us with a means of **travel, power** and **recreation**.

## 2. How does water flow into rivers?

The water cycle is the journey water takes between the **hydrosphere** (water), **atmosphere** (air) **and lithosphere** (land). At it's most simple, this involves evaporation, condensation and precipitation




A drainage basin is an area of land which feeds a river. The rain falling in this area will flow into the **river channel** and travel from **source** to **mouth**. The division between drainage basins is called the **watershed**. Where two rivers meet is called the **confluence** and smaller rivers feeding a bigger one is known as a **tributary**.




## 3. What work do rivers do?

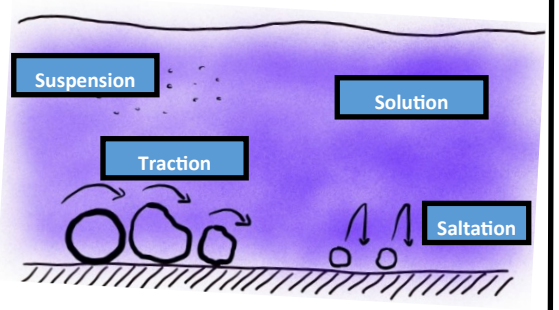
Rivers flow downhill due to gravity. Where the gradient of a river is steep, more energy is provided to erode the landscapes. Material found within a river is known as the **load** and this material is **transported** and **deposited** downstream.

### 1. River Erosion.

There are four types of river erosion: **abrasion, attrition, hydraulic action** and **corrosion**. (see key term glossary)

### 2. River Transport

The greater the volume of water in the river, the more energy it will have to transport material. There are four different ways in which a river may transport material: **suspension, solution, saltation** and **traction** (see key term glossary)




### 3. Deposition

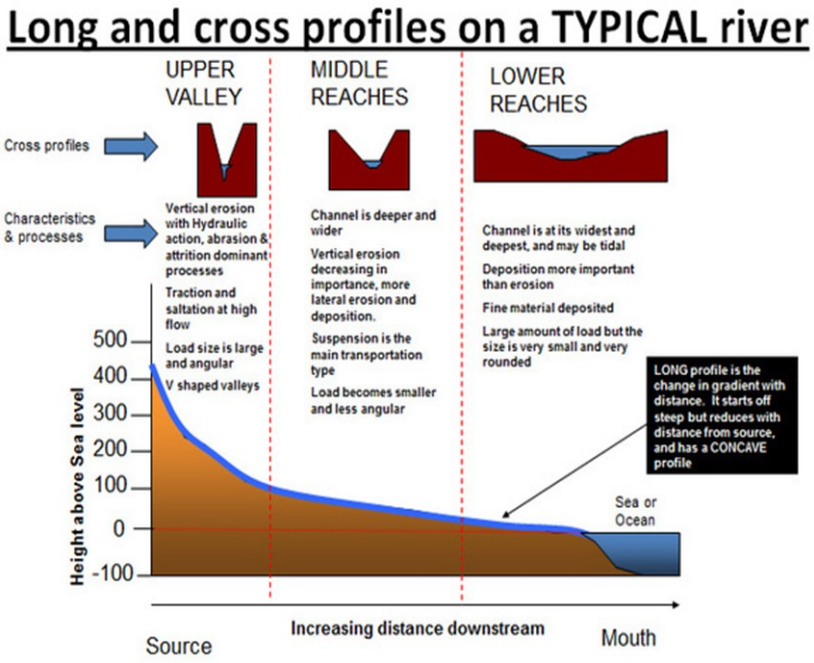
Deposition takes place when the river no longer has the
energy to carry material, so it is dropped. The larger rocks are dropped first due to the greatest weight.

Deposition will occur where:

- the gradient of the river or the volume of water decreases
- the water slows down on the inside bend of a river
- the river channels becomes shallower
- the river enters a lake or the sea.

## 4. How do rivers change from source to mouth?

Although no two rivers are the same, many share a similar **long profile,** which shows a change in the gradient of a river from source to mouth. A **cross profile** shows the gradient of slopes across the valley.




### Changes in the Valley Downstream

In the upper course of a river the gradient is steeper and the valley have steep v-shaped valley sides and narrow valley floors, as it moves further downstream the valley gets flatter and much wider.

**Upper Course— steep sided / narrow**


**Lower Course— flatter and wider**

### Changes in the River Channel Downstream

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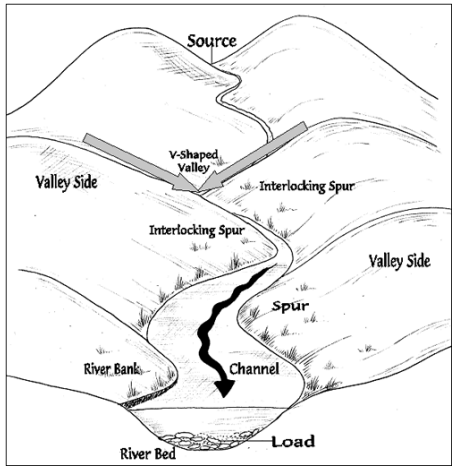
# RIVER LANDSCAPES continued..

## 5. How do rivers shape the land?

The processes of erosion, transport and deposition also have a key role in the formation of other river landscapes such as **v-shaped valleys, waterfalls** and **meander, flood plains** and **oxbow lakes.**

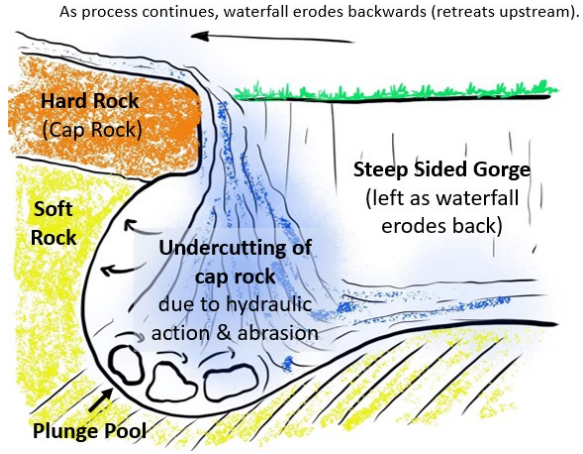
### 1. V-Shaped Valleys

In the upper course, the river cuts down **vertically** into the bed, creating **v-shaped valleys**. Where the river does not have the power to cut through hills it winds around them leaving **interlocking spurs**



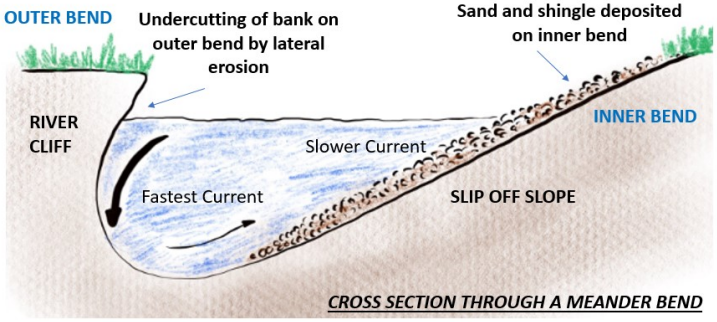

### 2. Waterfalls

A waterfall forms at a steep drop in the long profile of a river, **where a hard layer of rock lies over a softer, less resistant rock.** A deep pool forms at the base of the waterfall called a **plunge pool.**



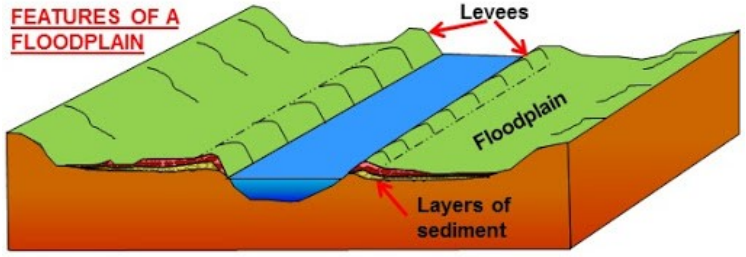

### 3. Meanders

A meander is a bend in the course of a river. On the outside of a meander the water is deeper and the current flows faster. The force of water undercuts the bank of the outside bend, forming a steep bank. This is called a **river cliff.** On the inside bend the current is slower, sand and pebbles are deposited forming a gentle **slip off slope.**




### 4. Floodplains

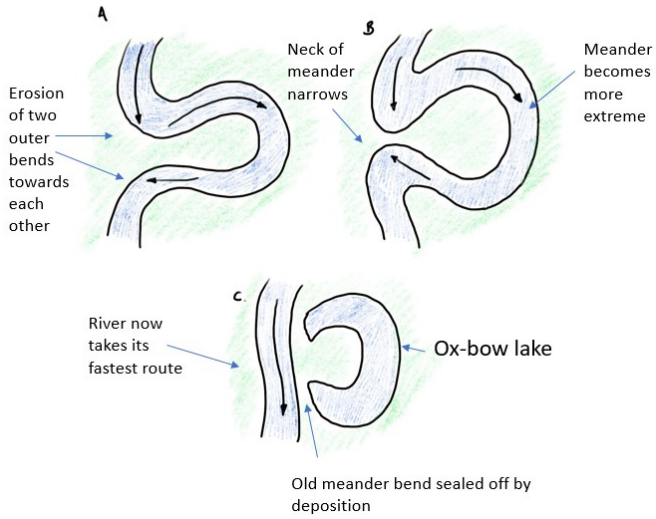
Lateral erosion (where the river is eroding into its banks) occurs at the lower stage of the river, forming a wide flat valley called a **flood plain**. As a river floods it deposits material, continuing to build up a flat wider floodplain.




### 5. Ox-Bow Lakes

Sometimes when the loop of a meander becomes extreme, two erosion banks can meet at a narrow neck. Eventually the channel can cut through leaving an **ox-bow lake.**

***OX-BOW LAKE FORMATION***




## 6. How are rivers important to people?

Historically settlements grew up next to rivers. River water supplied drinking water, narrow points along a river channel provide bridging points and a focus for roads, where people could trade, leading to a growth of a settlement. The mouth of a river can also provide a deep and wide natural harbour. For example, the mouth of The River Tees has developed into a large port which brings in raw materials for industries located in the area.

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# RIVER LANDSCAPES continued..

## 7. How do river floods create problems?

A flood occurs when a river has too much water in its channel. The water in the river overflows its banks and spreads out onto the surrounding area.

**The Causes of River Flooding**

| PHYSICAL CAUSES | HUMAN CAUSES |
|---|---|
| Heavy, prolonged rainfall | River Management |
| Saturated Soil | Deforestation |
| Impermeable rock | Urbanisation |
| Steep Gradient | |

## 8. The effects of Flooding

Flooding can have the follow types of effects:

**ECONOMIC EFFECTS**—cost of damage to buildings, loss of crops, insurance costs, damage to cars.

**ENVIRONMENTAL EFFECTS**—loss of habitats, land flooded, pollution of freshwater

**SOCIAL EFFECTS**—deaths, stress and anxiety, closure of schools etc.

## 9. Managing Floods

The Environment Agency (EA) is a governing body that has responsibility for the protection and enhancement of the environment in the England.

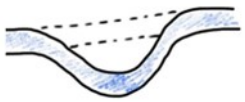
They also manage the risk of flooding and making people aware of how they can protect themselves and their property, using a combination of **hard and soft engineering approaches. Hard Engineering** being man-made artificial structures which try and control rivers.eg. building a raised bank. **Soft Engineering** being where more natural methods are used.eg. planting trees which uptake water.

### Hard Engineering

1. Build dams and reservoirs

2. Raise banks & dredge the river bed

3. Straighten rivers to speed up flow



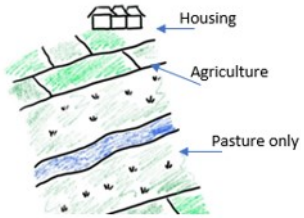
4. Build Concrete Walls.

### Soft Engineering

1. Warn and educate people

2. PLANTING TREES (more interception)

3. LAND–USE ZONING




## APPLYING YOUR KNOWLEDGE...

- Describe the main changes in a river and its valley as it moves from source to mouth.
- Describe and explain how a meander is formed.
- Outline the ways in which the risk of flooding can be re-

***Now Challenge yourself even further!***

- ***Try and find out what is meant by the Bradshaw Model***
- ***Investigate the causes, effects and responses to flooding in York or Bangladesh.***
- ***Through research create a poster to show how the River Severn changes from source to mouth.***

**Challenge Question:** In what ways can an increasing population lead to an increased flood risk?

## OTHER RESOURCES

BBC KS3 Bitesize—Rivers and Water https://www.bbc.co.uk/bitesize/topics/zs92tfr

River Flooding https://www.bbc.co.uk/teach/class-clips-video/geography-ks3-river-flooding/zmdq7nb

**KS3 Schoology**

SCAN ME

| Key Term | Definition |
|---|---|
| Abrasion | Rocks hitting into and scraping against the river bank wearing it away |
| Attrition | Rocks hitting into each other becoming smaller & rounded |
| Biological Weathering | The breakdown of rocks caused by living plants and creatures (e.g. roots forcing themselves into rock). |
| Chemical weathering | The breakdown of rocks by chemicals in the rock reacting with air and water |
| Condensation | The change in state from a gas to a liquid |
| Confluence | The point where two or more river channels join |
| Drainage Basin | The area of land drained by a river (i.e. land where a river gets its water from. |
| Evaporation | The change in state from liquid to gas |
| Groundwater Flow | The transfer of water through the ground back to the sea or river |
| Hydraulic Action | The force of water hitting the bank and squeezing air into cracks in rocks causing mini explosions |
| Infiltration | The movement of water into the ground from the surface |
| Interception | Where leaves on trees / plants stop rain reaching the ground |
| Mouth | The point at which a river meets the sea |
| Physical Weathering | The breakdown of rock caused by the effects of changing temperature in rocks & the effects of wind and rain. |
| Precipitation | Any moisture falling from the sky—including rain, snow, sleet and hail |
| River Channel | The path through which the river flows (consisting of bed and banks) |
| Saltation | Medium sized rocks 'bounced' along bed |
| Solution | Where minerals in rocks are dissolved by the water |
| Source | Starting point of a river |
| Surface Runoff | The movement of water over the surface of land into the rivers (also known as overland flow) |
| Suspension | Small material actually carried in the flow of the water |
| Throughflow | The horizontal movement of water through the soil |
| Traction | Large material rolled along bed of river. |
| Transpiration | The evaporation of water from the leaves of trees and plants |
| Tributary | A small river or stream which joins a larger river |
| Watershed | The invisible land (marked by high land) marking the edge of a drainage basin. |

**To test yourself Read, Cover, Write, Check OR try this quizlet https://tinyurl.com/KS3Rivers**