Physical processes:

YEAR 7 RIVER LANDSCAPES

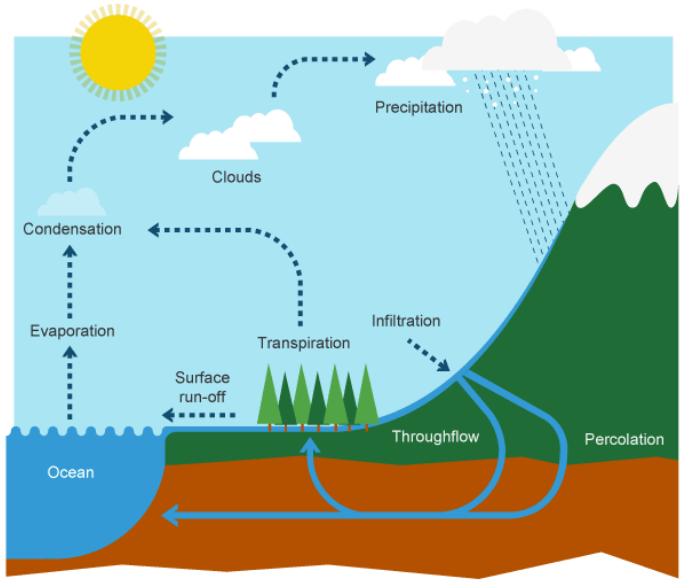
What is Deposition?

When the sea or river loses energy, it drops the sand, rock particles and pebbles it has been carrying. This is called deposition.

Types of Erosion

The break down and transport of rocks – smooth, round and sorted.

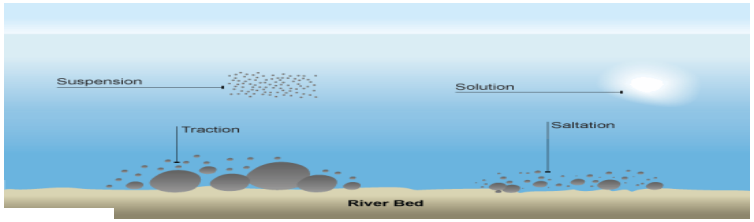
Attrition	Rocks that bash together to become smooth/smaller.
Solution	A chemical reaction that dissolves rocks.
Abrasion	Rocks hurled at the base of a cliff to break pieces apart.
Hydraulic Action	Water enters cracks in the cliff, air compresses, causing the crack to expand.



Types of Weathering

Weathering is the breakdown of rocks where they are.

CHEMICAL	Breakdown of rock by changing its chemical composition.
PHYSICAL	Breakdown of rock without changing its chemical composition.
BIOLOGICAL	The action of plants or animals breaking apart the rock or soil.



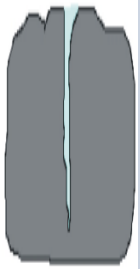
Mechanical Weathering Example: Freeze-thaw weathering

Stage One

Water seeps into cracks and fractures in the rock.

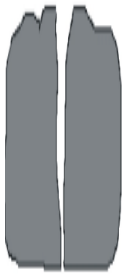
Stage Two

When the water freezes, it expands about 9%. This wedges apart the rock.



Stage Three

With repeated freeze-thaw cycles, the rock breaks off.



Water Cycle Key Terms

Precipitation	Moisture falling from clouds as rain, snow or hail.
Interception	Vegetation prevent water reaching the ground.
Surface Runoff	Water flowing over surface of the land into rivers
Infiltration	Water absorbed into the soil from the ground.
Transpiration	Water lost through leaves of plants.

Types of Transportation

A natural process by which eroded material is carried/transported.

Solution	Minerals dissolve in water and are carried along.
Suspension	Sediment is carried along in the flow of the water.
Saltation	Pebbles that bounce along the sea/river bed.
Traction	Boulders that roll along a river/sea bed by the force of the flowing water.

Upper Course of a River

Near the source, the river flows over steep gradient from the hill/mountains. This gives the river a lot of energy, so it will erode the riverbed vertically to form narrow valleys.

Middle Course of a River

Here the gradient gets gentler, so the water has less energy and moves more slowly. The river will begin to erode laterally making the river wider.

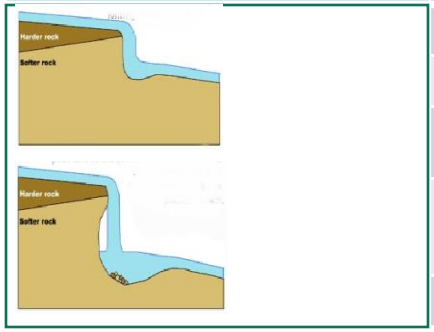
Lower Course of a River

Near the river's mouth, the river widens further and becomes flatter. Material transported is deposited.

Formation of Meanders and Ox-bow Lakes

Step 1	Step 2
 Erosion of outer bank forms a steep river cliff. Deposition on the inner bank forms slip off slope. A meander is created.	 Further hydraulic action and abrasion of outer banks, neck of the meander gets smaller.
Step 3	**Step 4**
 Erosion breaks through neck, so river takes the fastest route, redirecting flow	 Evaporation and deposition cuts off main channel leaving an oxbow lake.

Formation of a Waterfall



1) River flows over alternative types of rocks.

2) River erodes soft rock faster creating a step.

3) Further hydraulic action and abrasion form a plunge pool beneath.

4) Hard rock above is undercut leaving cap rock which collapses providing more material for erosion.

5) Waterfall retreats leaving steep sided gorge.

Physical and Human Causes of Flooding.

Physical: **Prolong & heavy rainfall** Long periods of rain causes soil to become saturated leading runoff.	***Physical:*** **Geology** Impermeable (doesn't let water through) rocks causes surface runoff to increase river discharge.
Physical: **Relief** Steep-sided valleys channels water to flow quickly into rivers causing greater discharge.	***Human:*** **Land Use** Tarmac and concrete are impermeable. This prevents infiltration & causes surface runoff.

River Management Schemes

Soft Engineering	Hard Engineering
Afforestation – plant trees to soak up rainwater, reduces flood risk. **Flood Barriers** put in place when warning raised. **Managed Flooding** – naturally let areas flood, protect settlements.	**Straightening Channel** – increases velocity to remove flood water quickly and reduces the land a river takes up.. **Embankments** – walls-heightens river so flood water is contained. **Deepening or widening river** to increase capacity (amount) for a flood.