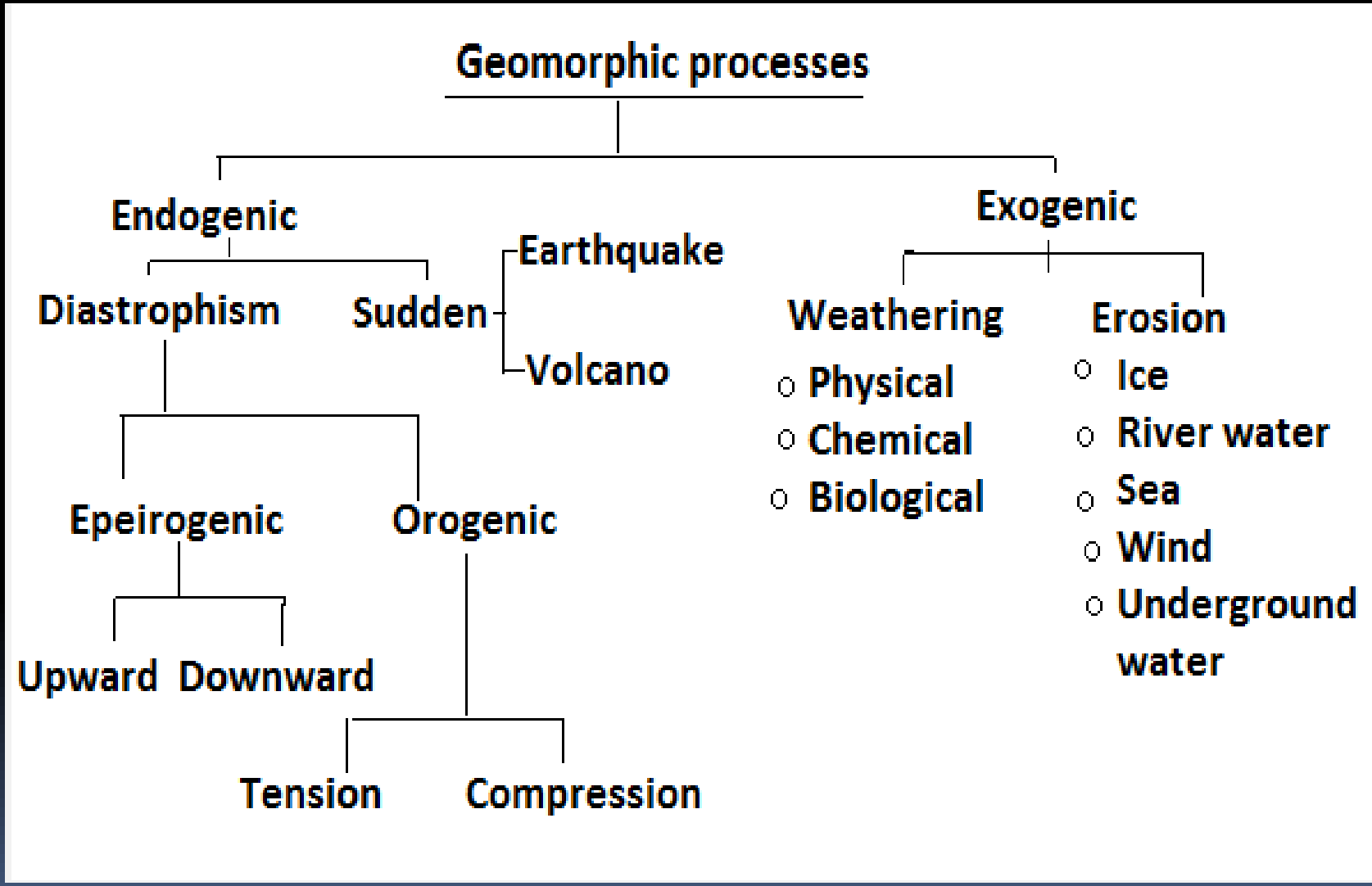
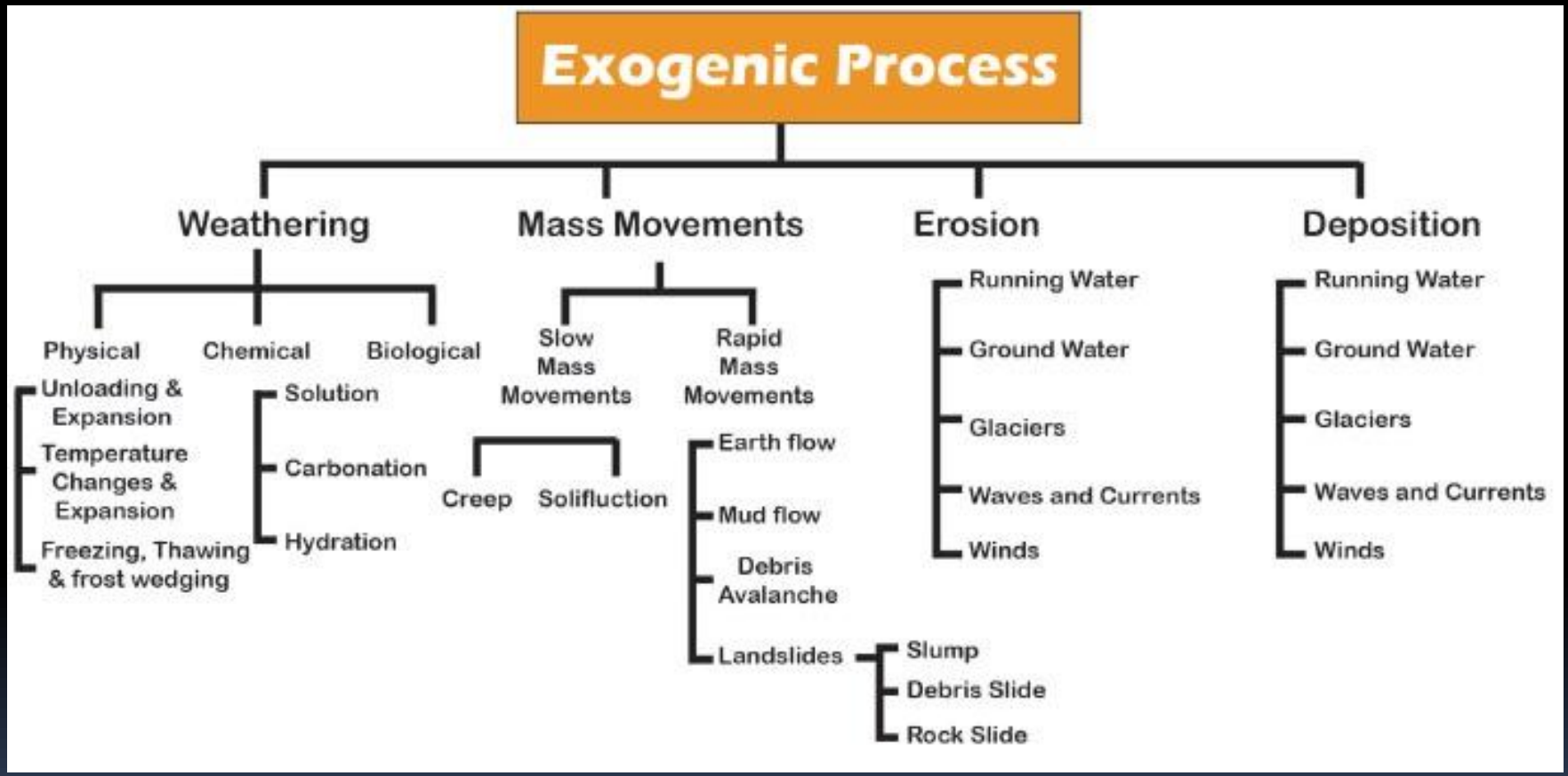
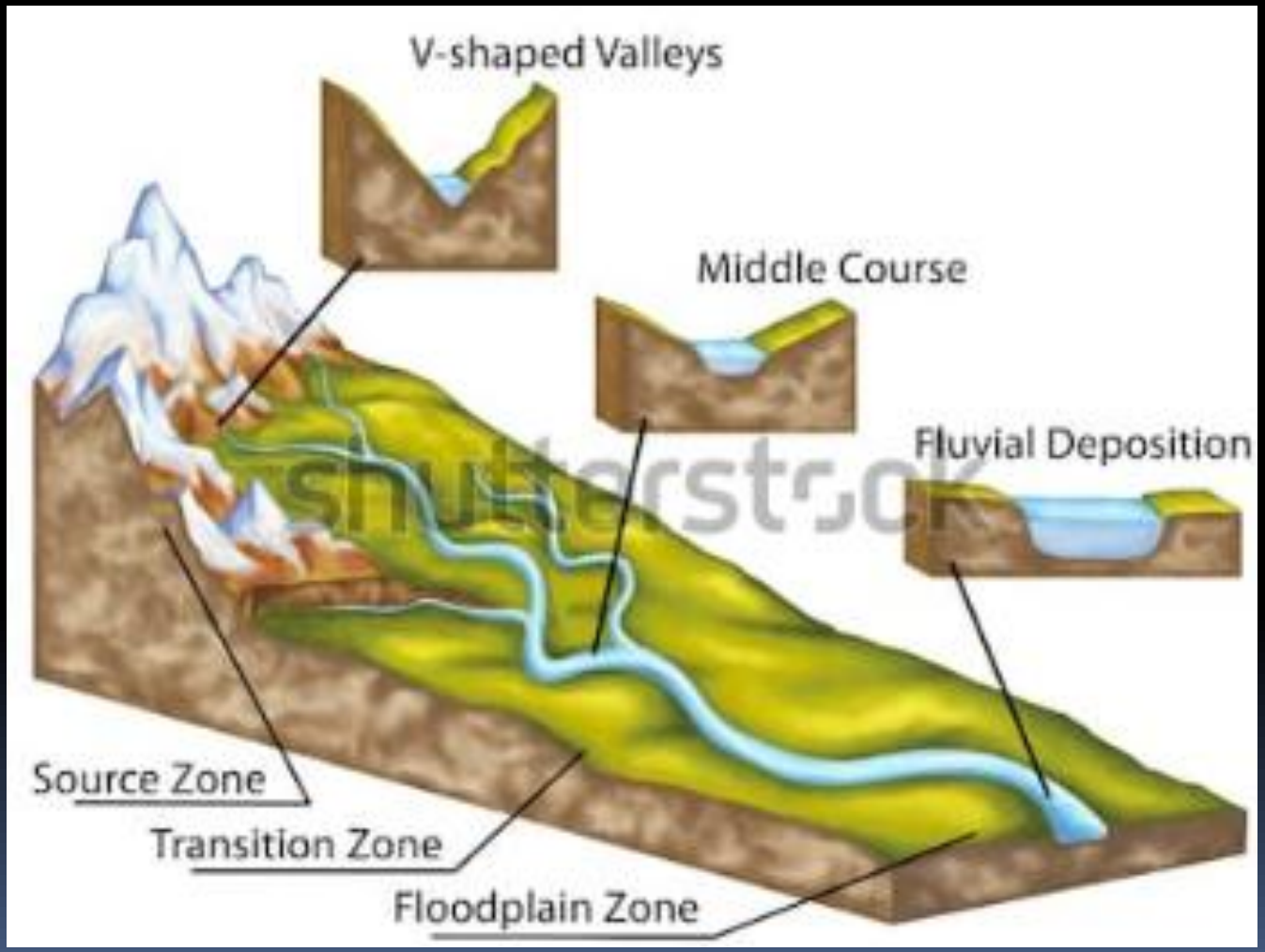

Geomorphic processes
Endogenic
Exogenic
Diastrophism
Sudden
Earthquake
Volcano
Weathering
Erosion
Physical
Chemical
Biological
Ice
River water
Sea
Wind
Underground water
Epeirogenic
Orogenic
Upward
Downward
Tension
Compression


Exogenic Process
Weathering
Mass Movements
Erosion
Deposition
Physical
Chemical
Biological
Unloading & Expansion
Temperature Changes & Expansion
Freezing, Thawing & frost wedging
Solution
Carbonation
Hydration
Slow Mass Movements
Rapid Mass Movements
Creep
Solifluction
Earth flow
Mud flow
Debris Avalanche
Landslides
Slump
Debris Slide
Rock Slide
Running Water
Ground Water
Glaciers
Waves and Currents
Winds
Running Water
Ground Water
Glaciers
Waves and Currents
Winds

FLUVIAL LANDFORMS

Three Stages of a River



Fluvial Landforms in different stages of a river

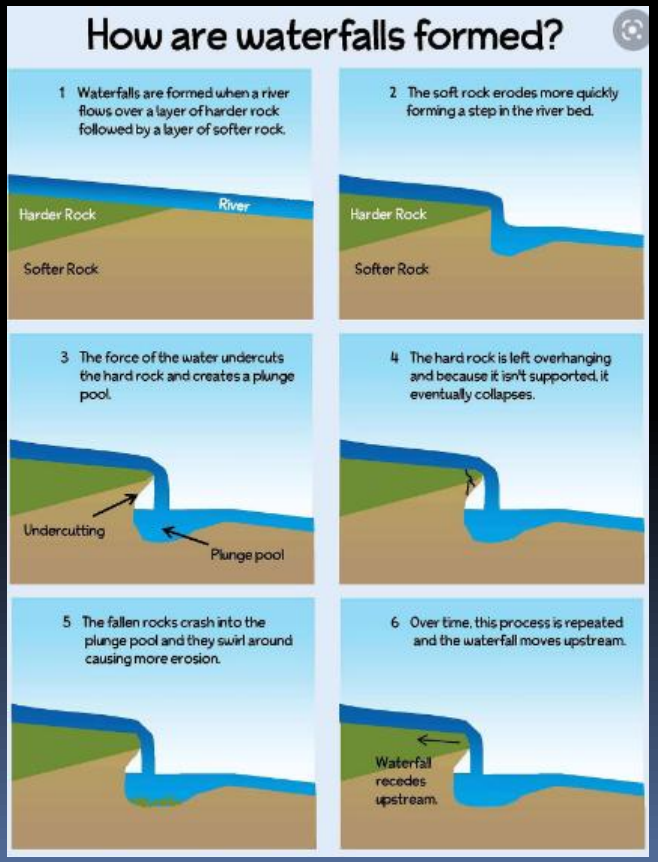
Stages	Landforms
Upper	Waterfall, Gorge, Underground Caves, Potholes, Rapids
Middle	Bank erosion, Point Bar, Braiding, Meander, Oxbow Lake
Lower	Levee, Flood Plain, Estuary Delta,

Fluvial Erosional Landforms

- Canyon and Gorge
- V- shaped Valley
- Waterfall
- Potholes

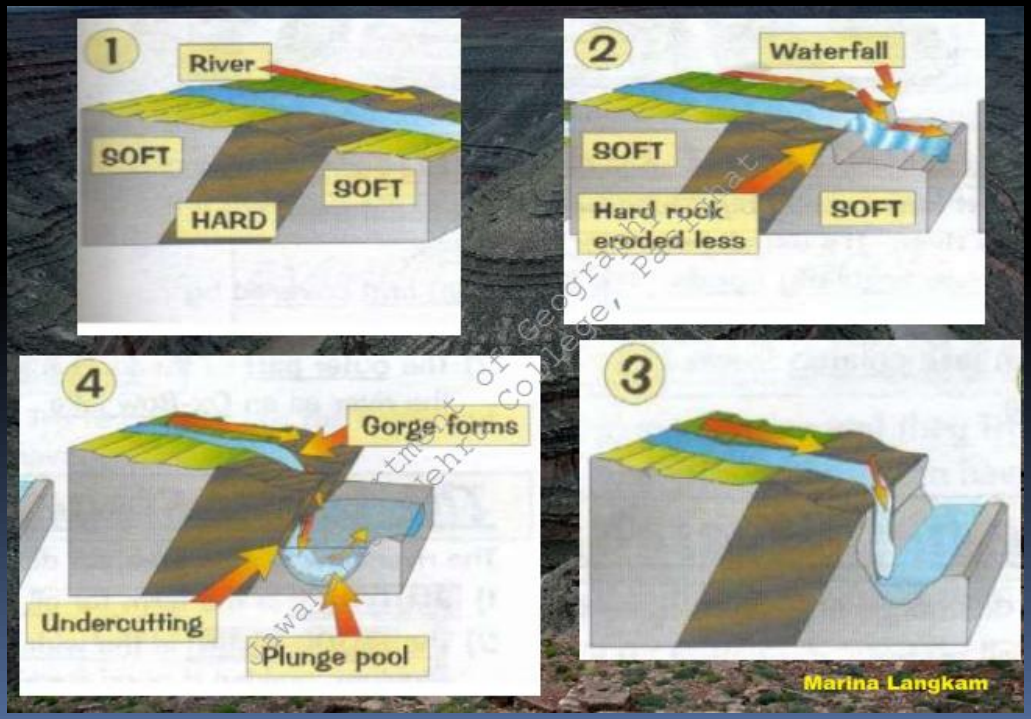
Water Fall

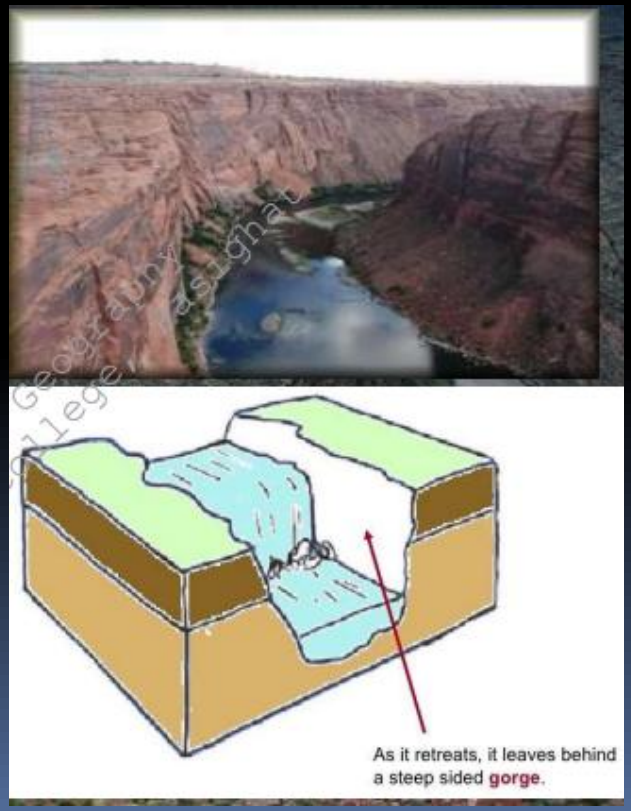
- A waterfall is when a river falls over a verticals slope.
- It is found in the youth stage of a river where there are areas of hard and soft rocks.



Canyon and Gorge

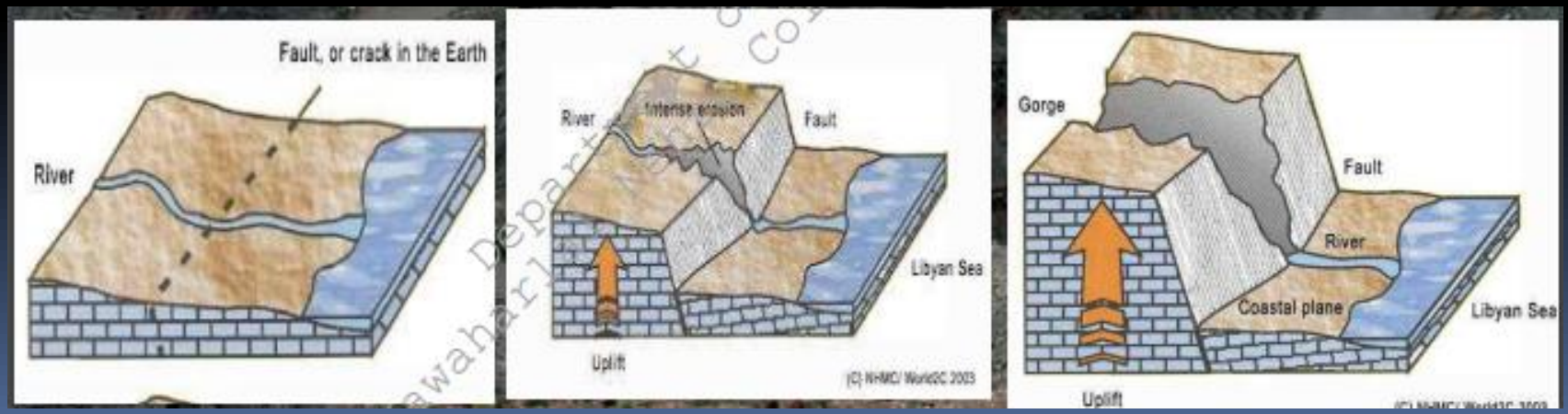
- Canyon (US) or Gorge (Europe) represents very deep and narrow valleys having very steep valley side slopes
- They are mostly formed when the process of forming a waterfall is repeated frequently, as the waterfall retreats upstream





Other causes of Gorge formation

- Gorge are also form where
  - A river flow along a line of weakness
  - A river maintain its course across a landscape which is slowly being uplifted.
  - A river cut across a plateau composed of horizontal and alternate lavers of hard and soft rocks.

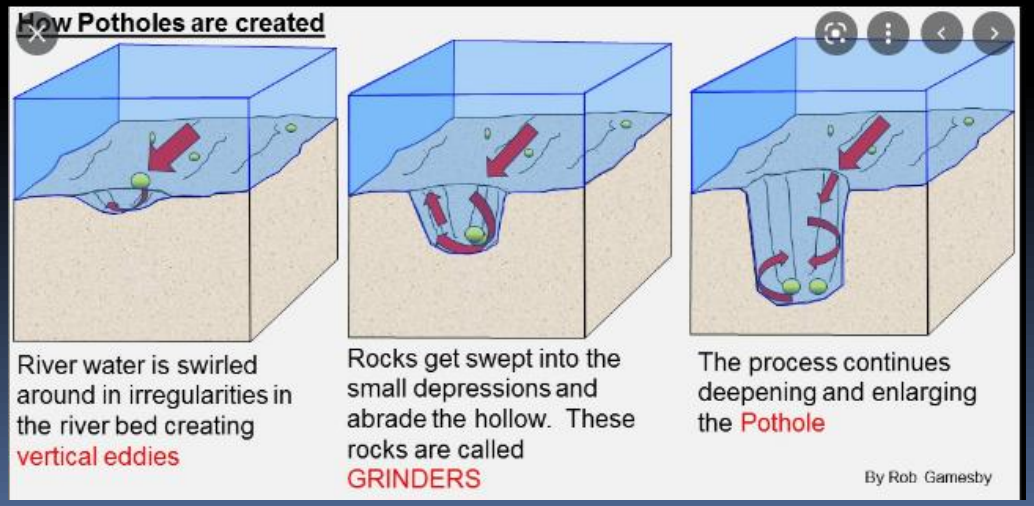


V shapes Valley

- An elongated lowland between ranges of mountains, hills, or other uplands, often having a river or stream running along the bottom.

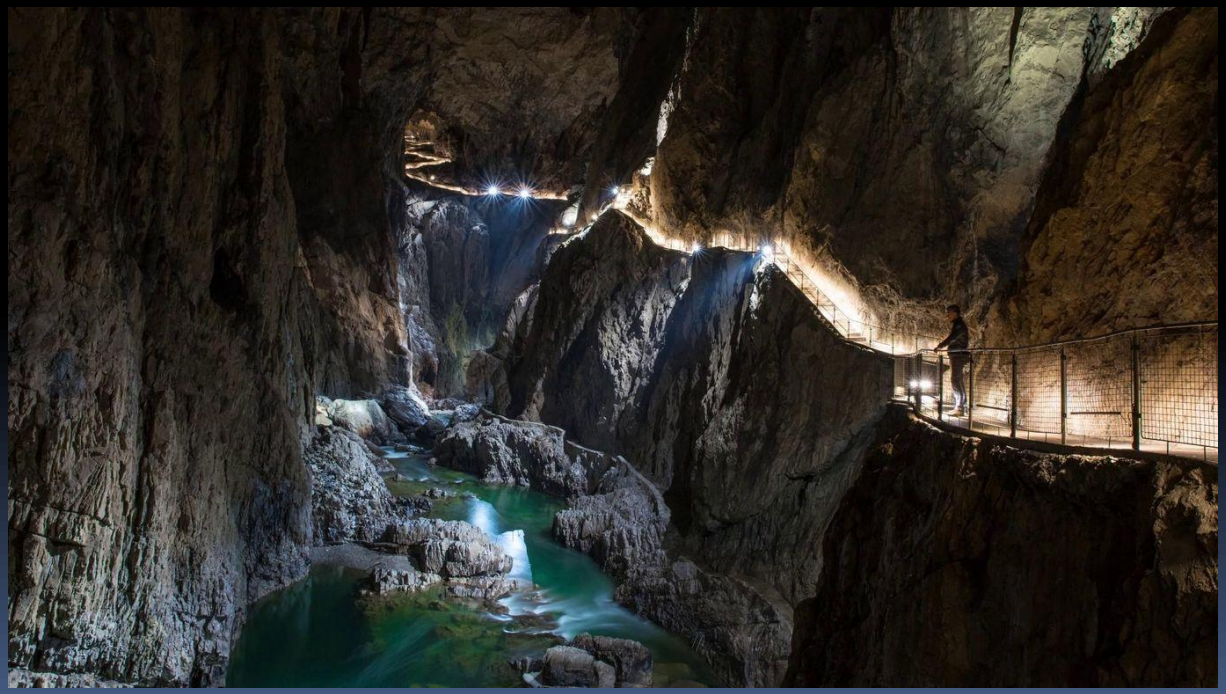
Potholes

- Holes scoured into bedrock by swirling water/sediments.
- Abrasion by sediment which enters a depression; bedrock scoured by swirling sediment.
- Water able to erode due to power associated with velocity and cavitations; eddies.



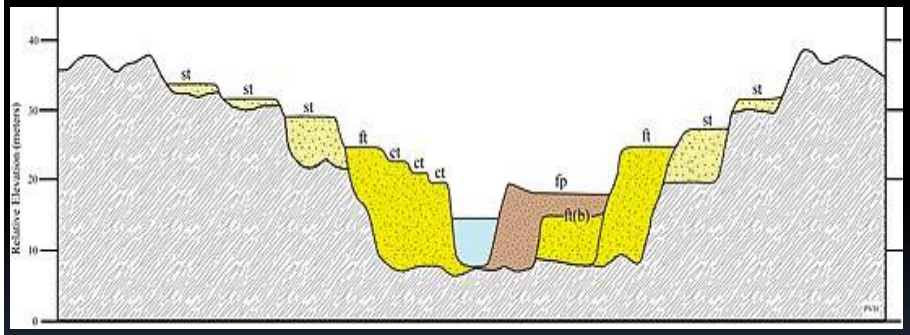
Underground Caves

- In limestone topography river eroded the limestone areas and creates caves



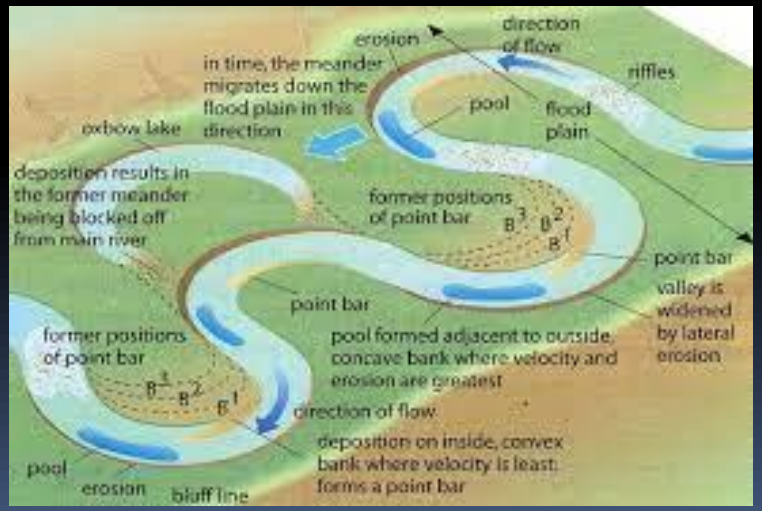
Stream Terraces

- These are bench like flat surfaces that occur on the sides of many river valley.
- From a distance they may appear as successions of several steps of big natural staircase rising up the river bed.



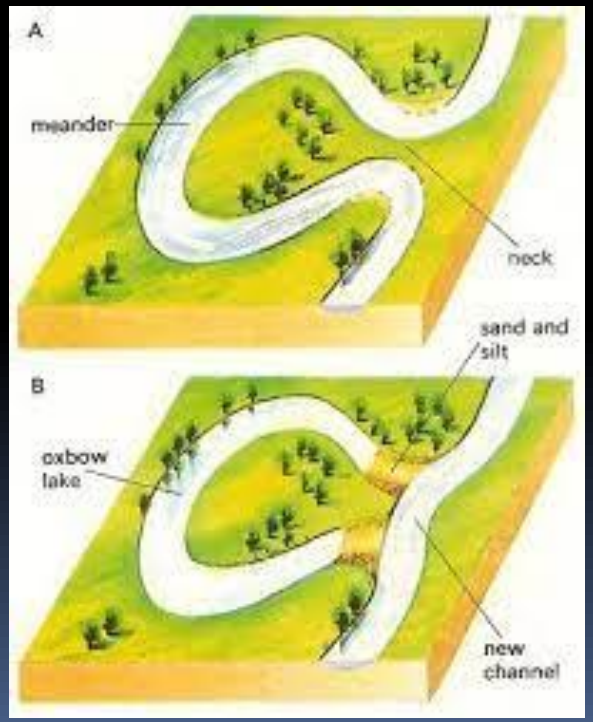
River Meander

- **Meander** is one of a series of regular sinuous curves in the channel of a river or other watercourse. It is produced as a watercourse erodes the sediments of an outer, concave bank (cut bank) and deposits sediments on an inner, convex bank which is typically a point bar.



Oxbow Lake

- Lakes formed due to impounding of water in the abandoned meander loops



Depositional Landforms

- The deposition of load carried by the streams is affected by a variety of factors:
  - decrease in channel gradient,
  - spreading of stream water over larger area,
  - obstructions in channel flow,
  - decrease in the volume and discharge of water,
  - decrease in the velocity of streams,
  - increase in load

Depositional Landforms

- Alluvial fans and Cones
- Natural Levees
- Flood Plain
- Channel and Sand bars
- Delta

Alluvial Fan & Cone

- Alluvial fans are fan-shaped deposits of water-transported material (alluvium).
- Alluvial fans have gentler slopes than the cones

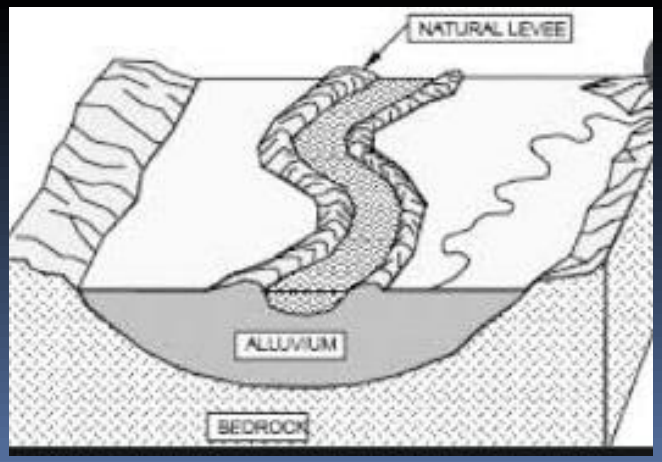
Alluvial Fan

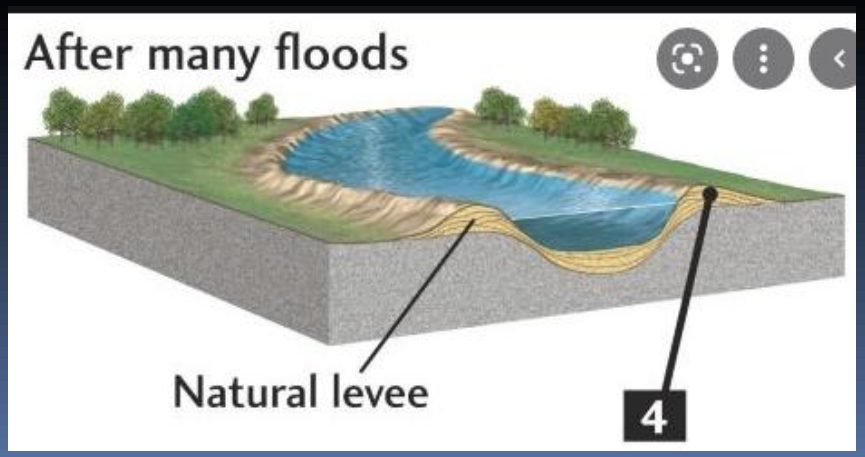
Alluvial Fan

Alluvial Cone

Natural Levee

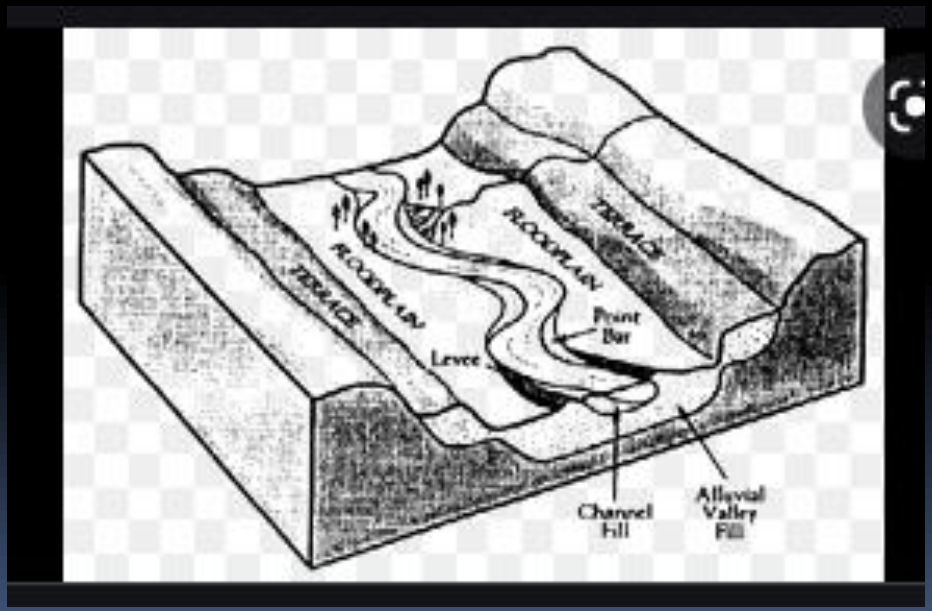
- An embankment of silt and sand built up by a stream along both its sides.
- Narrow belt of ridges of low height along the river banks.
- Formed due to deposition of sediments during flood periods when the water overtops the river banks and spreads over adjoining flood plains.
- Not all the streams build natural levees.

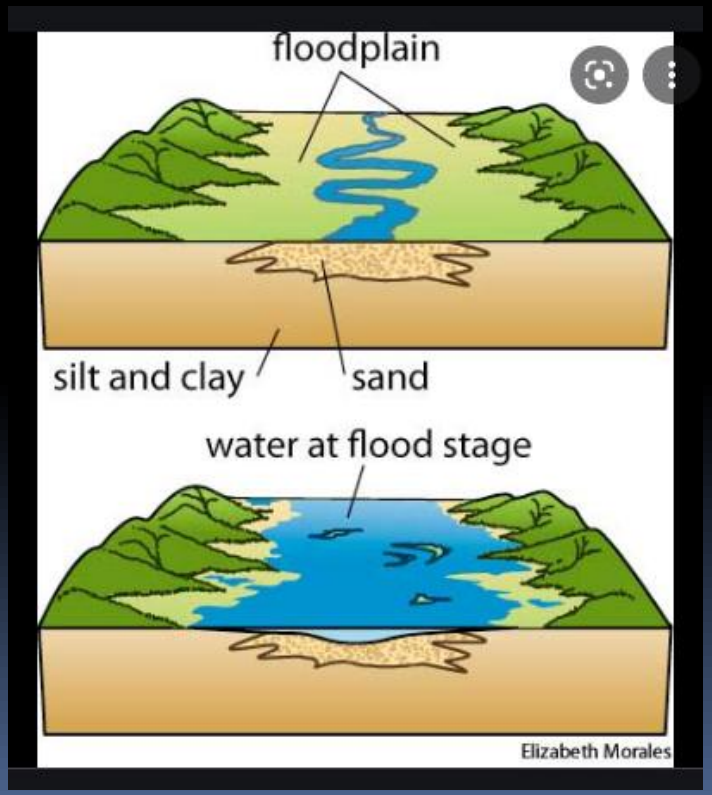




Flood Plain

- An area of low, flat land along a stream or river, formed mainly of river sediments and is subject to flooding





Sand Bars

- An elongate accumulation of sand, lying parallel to the shore.
- An elevated region of sediment that has been deposited by the flow.

Braided Stream

- Due to the deposition in the river bad many large, heavily laden river spread out sheets of material which may split the stream in to complicated channels. Such rivers are called braided river.

Delta

- **The depositional feature of almost triangular shape at the mouth of a river merging either in a lake or a sea is called delta.**