

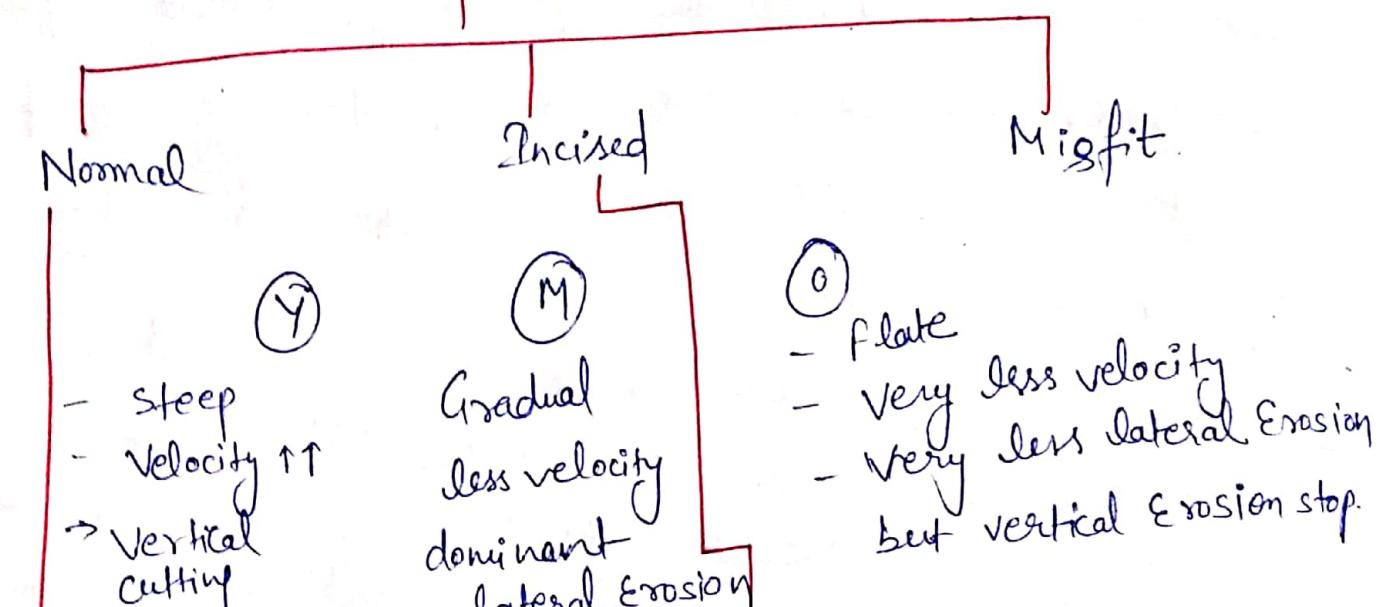
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Geography

Date
26/12/20

Landform

Meandering



- Normal
- Mature
 - Alluvial topography
 - Lateral Erosion

- Incised
- Young stage (Rejuvenation)
 - Alluvial or Hard rock surface
 - Vertical incision

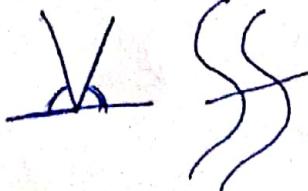
Misfit

* on a flat surface rivers flow a meandering pattern.



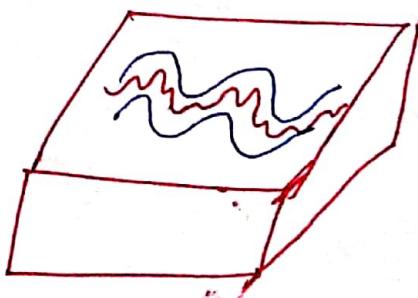
Incised

Intruded
or
Entrenched



Ingrown

Asymmetrical Slope



(2) It refers to the bends of longitudinal courses of the rivers. Meandering is a natural process which is governed by No of environmental factors that is lithological characteristics topography, general slope vegetation, annual precipitation etc. Each bend of meandering belt has two types of slope of valley sides.

1. One side is characterised by concave slope where the channel strikes the valley side directly with the result concave side is subjected to severe erosion resulting into the formation of vertical cliffs. This side of the meandering belt is called as cliff slope side.
2. The other side of the meandering belt is characterised by convex slope which receive deposition mostly of sand and gravels but sometimes Alluvium is also deposited. This convex side is characterised by gentle slope and is called the side of slip of slope.

Meanders are divided into two major types on the basis of & nature of

fluvial Erosion for e.g. (i) meandering, develop (3)
through lateral erosion (Normal meandering)

(ii) Meandering develops by vertical erosion or
valley deepening (insect meandering).

further insect meanders can be divided on the basis of nature and slope of valley sides into

(i) Entrenched / Intrenched Meandering, having uniform slopes of both the valley sides of meandering loop.

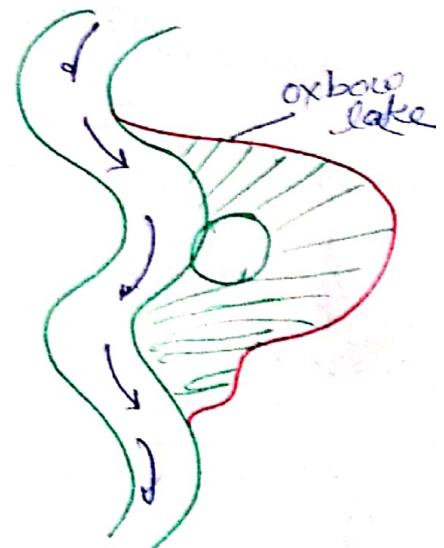
(ii) Ingrown Meandering → It has unequal slopes of valley sides wherein one side of the valley representing concave side is deeply undercut and the other side is characterised by gentle valley side slope and deposition of sediments mainly sands.

Misfit Meandering → It represents those meanders which are formed within the extensive former meanders due to substantial decrease in the volume of water. The river develops extensive meander loops and belts in alluvial plains and are broken into several channels which wonder in the extensive broad and flat valleys when by any

(4) reason the volume of water in concern gives decreases substantially. channels become narrow These narrow channels become unable to fit themselves. in the broader former valleys. and hence they develop their own meandering course of narrow valleys within the older wider meanders. Such narrow meanders are called as misfit meanders.

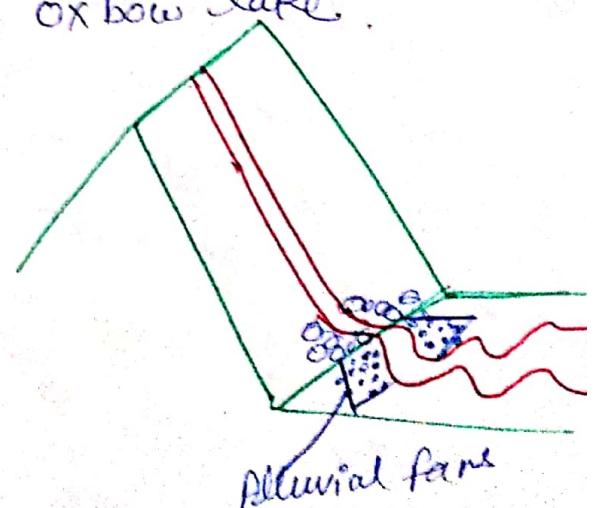
Oxbow Lakes

When the curvature of the meandering loops is so accentuated due to lateral erosion, the meandering loops become almost circular and the two ends of the meandering loop come closer, consequently the stream strengthens their courses and the meandering loops are abandoned to form oxbow lake.



Depositional Landform

Alluvial fans & cones



(5)

they are formed due to accumulation of materials formed at the base of the foothills where there is abrupt drop in the channel gradient. The transporting capacity of the streams decreases enormously at the foothill zones while they leave the mountains and enters the plain topography because of substantial decrease in their velocity consequent upon decrease in channel gradient. Consequently load consisting of finer to coarser and big sized material coming from upstream is deposited at the point of break in slope or foothill zone and thus Alluvial fans or cones are formed.

Difference b/w Alluvial fans and cones

The slope of fans are much gentler than those of alluvial cones. Larger alluvial fans are characterised by gentle to moderate slopes while alluvial cones have relatively steeper slopes. Alluvial cones are made of course material than the alluvial fans.

Natural levees & Point Bars

The narrow belt of ridges of low height built by the deposition of sediments by spill water of the stream on its either bank is called natural levee or natural embankment.

Point Bars - It is a depositional feature made up of Alluvium that accumulate

⑥ On the inside bend of the stream and river below the ^slip of slope.

Point Bars are found in abundance in mature or meandering streams. They have very gentle slopes and elevation very close to water level.

Deltas

The depositional feature of almost triangular shape at the mouth of river draining either in the sea or a lake is called delta. The ideal condition for the formation of delta include — shallow sea, long course of the river, medium size of sediments, Relatively calm sea at the mouth of the river, Large amount of sediment supply. There should not be too many lakes in the course of the river. River should be in young stage at the place of origin, in mature stage in the middle course and should be in the old stage at the mouth.

Arcuate Delta

Such deltas are formed when river water is as dense as sea water.

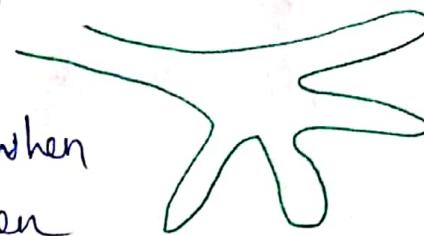
Arcuate Deltas are formed of coarser materials



such as gravel, sand and silt. Such deltas are very often formed in the regions of semi-arid climate for eg: Ganga Delta (largest in world) Nile Delta (second largest in the world).

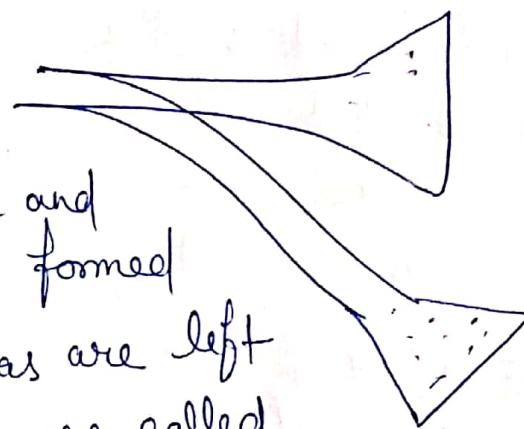
Bird foot Delta

Such deltas are formed when river water is lighter than sea water. for eg. ~~Mississippi~~ Mississippi Delta. (3rd largest in world)



Abandoned Delta

When the river shift their mouth in the sea and oceans, new deltas are formed while the previous Deltas are left un nourished. Such Deltas are called abandoned Deltas. eg → Hugli River.



Truncated Deltas

Sea waves and ocean currents modify and even destroy Deltas deposited by the rivers through their erosional work. Thus eroded and dissected deltas are called truncated Deltas.

eg. Yellow river Delta.

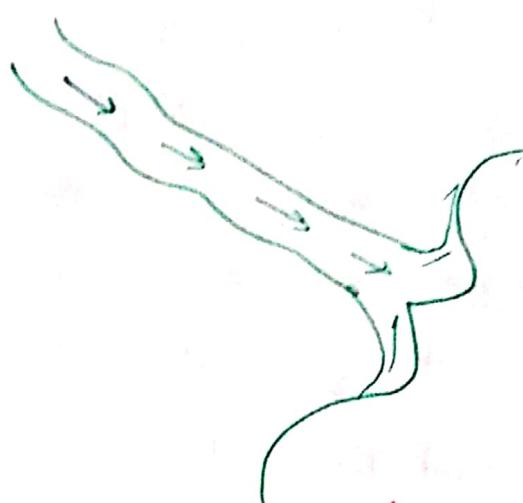
Blocked Delta - These are those whose growth is blocked by sea wave and ocean currents through their erosional activities.

The progradation of Deltas may also be hampered due to sudden decrease in the supply of sediments consequent upon climate change or management of catchment areas of concerned rivers e.g., Danub Delta.

Cuspate Delta

Cuspate Deltas are shaped like a V with curved sides. They form when a river flows into a sea with waves that hit head on spreading the deposited sediments out.

e.g., Ebro Delta of Spain
& Tiber Delta of Italy.



Coastal Processes & Associated Land forms

- ↓
- #### Erosional Land forms
- ↳ Sea Cave
 - ↳ Cliffs & Groyne
 - ↳ Wave cut platform
 - ↳ Sea stack
 - ↳ Sea stump

Depositional Land forms.

- ↳ Beaches & dunes
- ↳ Bars, barriers
- ↳ Spits
- ↳ Tombolo

Ria Coast & fjords

③

Coastal Process are the most dynamic and hence most destructive. Most of the changes along the coast are accomplished by the waves. Storm waves and Tsunami waves can cause far reaching changes in a short period of time than normal breaking waves. As wave environment changes, the intensity of the force of breaking waves changes.

Erosional Landforms

1. Wave cut cliffs and terraces

These are two forms usually is the dominant shore process. are steep and may ranged from meter or even more. at the behind. Such platform occurring at elevation above the average height of waves is called wave cut terrace.

found where erosion almost all sea cliffs a few meter to 30 foot of such cliffs there may be a flat or gently sloping plateform covered by rock debris derived from sea cliff.

The lashing of waves against the base of the cliff and the rock debris that gets smashed against the cliffs along with lashing waves create holes and those holes gets widened and deepened to form sea caves.

(10)

The roof of the cave collapse and the sea cliffs received further inland. Retreat of the cliff may leave some remnant of rocks standing isolating as small island just of the shore. Such resistant masses of rocks, originally part of the cliff or Hill are called sea stacks. These sea stacks are eroded living behind only the stump which are just visible from the sea level.

- Goups Geos

The occasional splashing of the waves against the roof of the cave may enlarge the joints when compressed air is trapped inside. A natural shaft is thus formed which may eventually break through the surface. Waves breaking into the cave may force water or air out of this hole. Such a shaft is termed as Goups or Blowholes. The enlargement of blowholes and the continued action of wave weakens the cave roofs. When the roof collapses a long narrow inlet or creek develops this is known as Geos.

Capes & Bays

A Cape is a headland of large size extending into a body of water usually to the sea. It usually represent a marked change in trend of a coastline. Their proximity to the coastline makes them prone to natural forms of erosion, mainly tidal actions.



Bay has a wider mouth than a Gulf. Bays are more often formed by the erosion of a coastline or flooding while Gulfs are generally created by the movement of the earth place to form deeper more inclose water.

Beaches and Dunes

Beaches are characteristics of shorelines that are dominated by deposition, but may occur as patches along even the rugged shores. Most of the sediment making up beaches come from land carried by streams or rivers or from wave action.

(12) Just behind the beach, the sand lifted from over the beach surfaces will be deposited as sand dunes forming long ridges parallel to the coastline are very common along the sedimentary coastal areas.

Bars, Barrier, Spits and Tombolos

Ridge of sand formed in the sea in the offshore zone lying approximately parallel to the coast is called an offshore bar. Such a connecting bar that joins two land masses is better known as Tombolo.

An offshore bar which is exposed due to further addition of sand is called barrier bar.

Offshore bars and barriers, commonly form across the mouth of a river or at the entrance of a Bay. Some time such barrier bars gets attached toward only to the one end of the Bay. When they are called as spits.