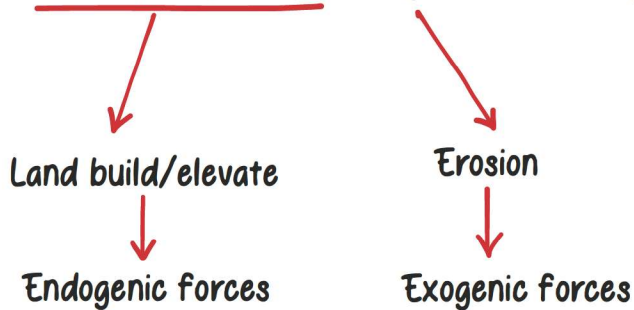


GEOMORPHOLOGY AND LANDFORMS



Geomorphology

- Geomorphic process: Changes in the configuration of Earth



- Example:

Himalayas: continuously increasing → Endogenic > Exogenic

Aravalis: continuously decreasing → Exogenic > Endogenic

- Endogenic forces: the pressure within the earth, also known as internal forces

↓
Energy from:

- Radioactive decay
- Tidal friction
- Primordial heat

* Convection current: Arthur Holmes

Changes categorised into:

1. Diastrophism: it is kind of process that move/elevate/build up the process of Earth

Endogenic Processes:

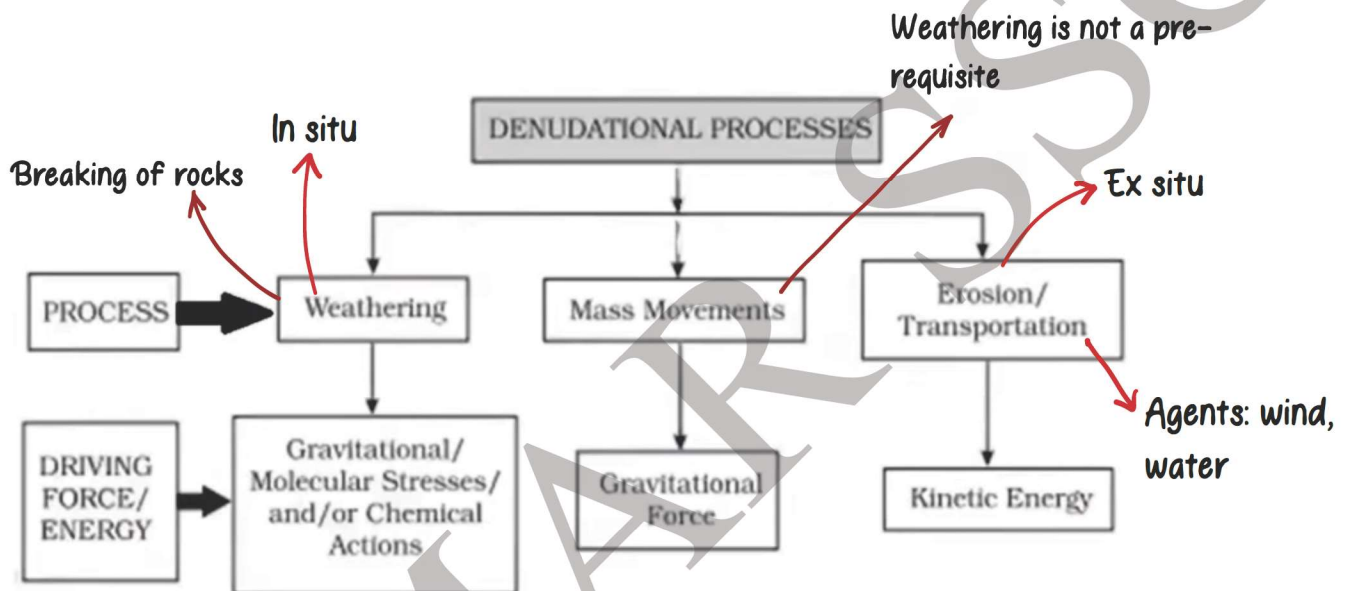
- a. Orogenic: process through which mountains are built
- b. Epeirogenic: other changes except mountain build up
- c. Earthquake: shaking of Earth
- d. Plate tectonics

2. Volcano: openings/vents where lava or magma erupts

- Exogenic Processes: due to Exogenic forces, causes wearing and tearing

- Gradation: wearing down of relief features of Earth

- Collectively Exogenic forces are called **Denudation**
- Exogenic Agents: running water, wind, waves, ground water
- Ultimate sources of energy for all exogenic forces: Sun



- Weathering: Action of elements of weather and climate over Earth Materials
It is a in situ process
- Types of weathering:
 1. Chemical weathering: the erosion or disintegration of rocks, building materials, etc. caused by chemical reactions
 2. Physical/Mechanical weathering: disintegration without chemical change
 3. Biological weathering: caused by movement of plants and animals
- Effect of Weathering:
- Exfoliation: process when large, curved plates or slabs of rocks are stripped away from the outer surface of a rock mass

Mass Movement

Fast

Slow

weathering is not a pre-requisite for Mass Movement, it aids the Mass Movement

- Main force involved: Gravity

Types:

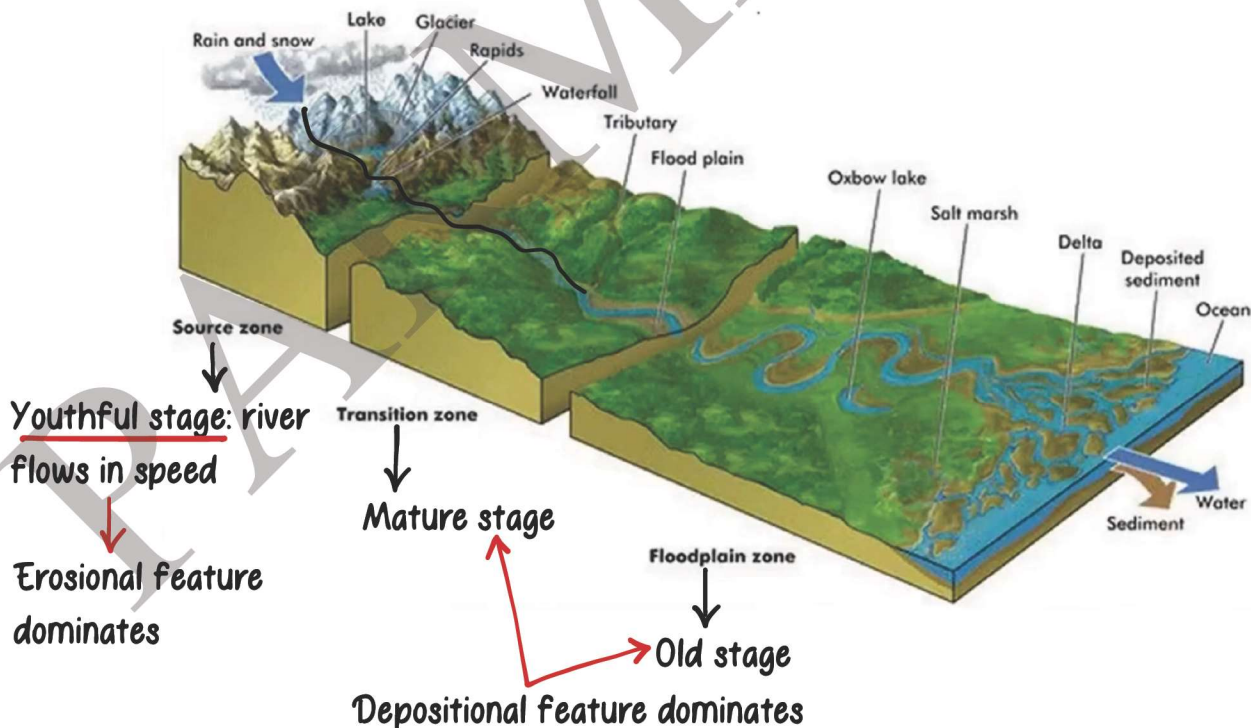
- Landslide
- Avalanche
- Earthflow
- Mud flow
- Creep: slow downslope movement of particles
- Solifluction: slow progressive movement of mass down a slope

• Landforms

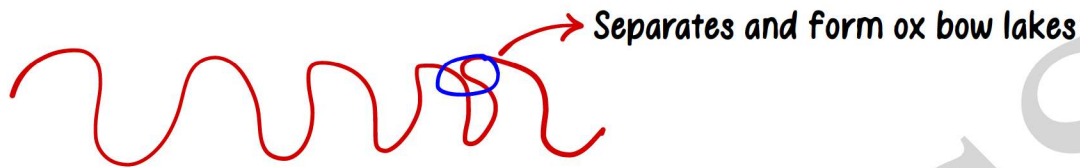
Types:

1. Erosional
2. Depositional

• Landforms Created by River



- Youth stage: V-shaped valley, Gorges, Canyon, Waterfalls, Rapids, entrenched meander
- Mature stage: Meanders
- Old: ox-bow lake, delta, levees, flood plain



Erosional features:

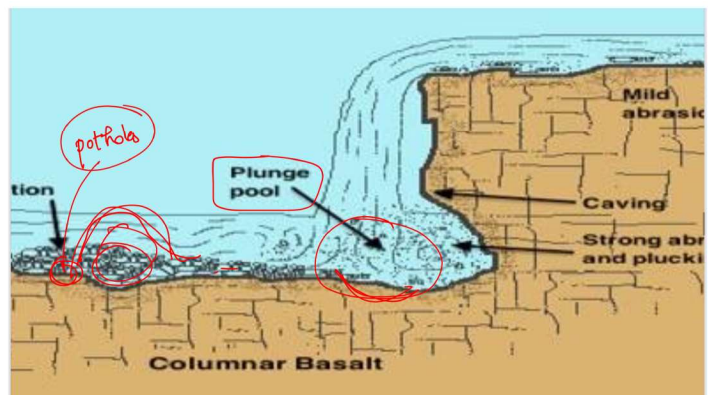
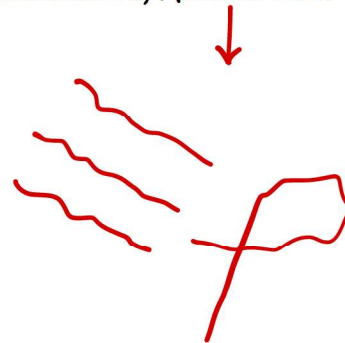
- V-shaped valley, Gorges, Canyon, Waterfalls, Pothole, Plunge pools, River terraces

Incised Meanders: a meandering river valley that has cut down its bed into the bedrock because of uplift or lowered base level

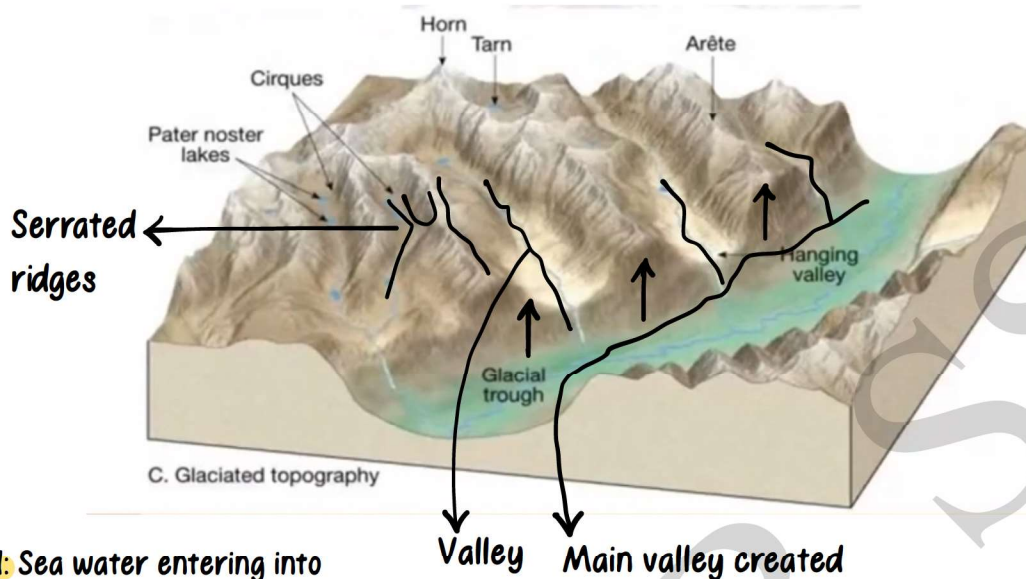


- Depositional features: flood plains, Delta, ox bow lakes, meanders, Alluvial fans

Alluvial fan



Landforms Created by Glacier



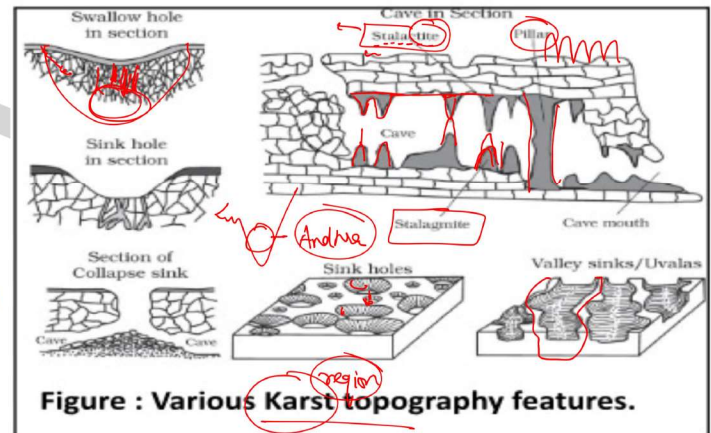
* **Fjord**: Sea water entering into glacial valley

Erosional

- Cirque: are created in heads of glacial valleys
- Ridges/Arête
- Horn
- Hanging Valley
- Glacial Valley

Depositional

- Moraine
- Eskers
- Drumlins
- Outwash plains



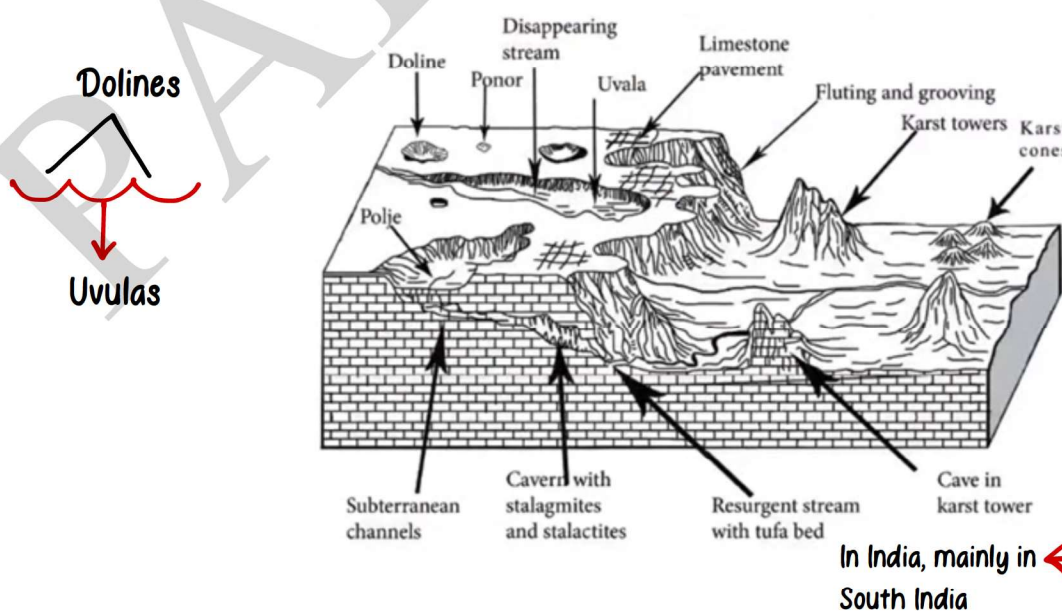
• Landforms Created by Groundwater: usually seen in places where rock is soft

Dolomite/Limestone

Chemical weathering

Karst Topography (in groundwater)

Found in Karst region in Mediterranean Sea where rocks are made of Limestone and Dolomite

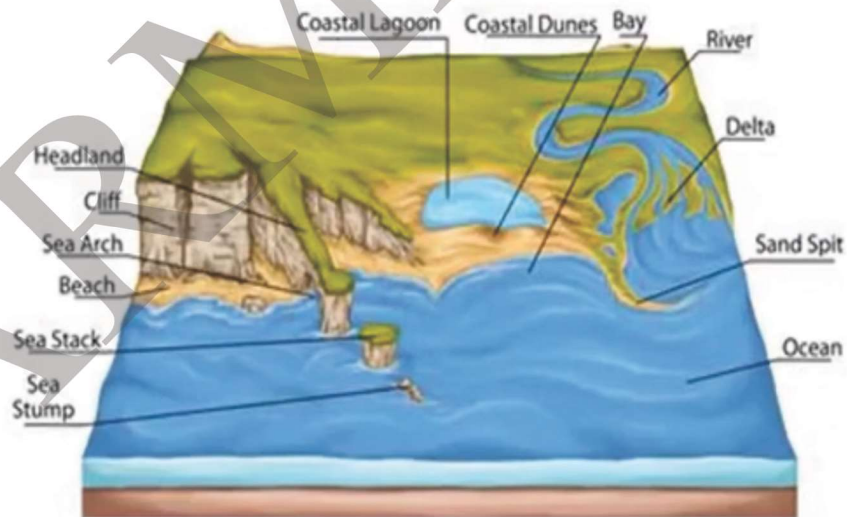


- Erosional: pools, sink holes, dolines, lapies, uvalas, limestones

- Depositional: Stalactite, Pillars, Stalagmite

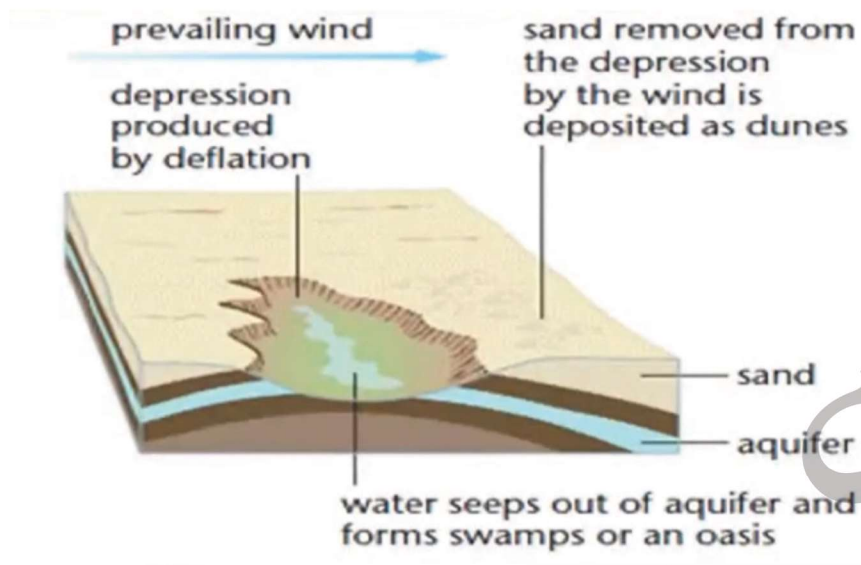


- Landforms Created by Sea Waves



- Erosional: cliff, caves, stack, arch
- Depositional: beaches, dunes, bars, barrier, spits

• Landforms Created by Wind

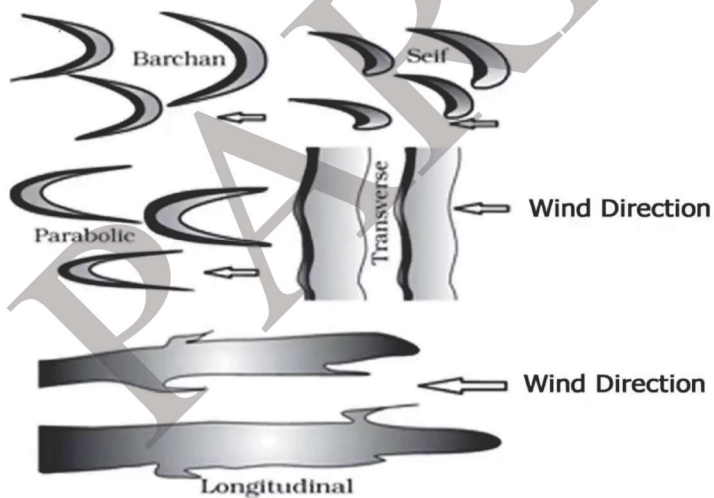


• Erosional: Pediplain, Playas, Mushroom rock, Pedestal rocks

• Depositional: Sand Dunes

Barchan

Seif



Mushroom Rock

1. Horn: Glacier
2. Lapie: sinkhole, pool, lapies, Dolines → Erosional landform by Groundwater

3. Ox-bow lakes:  River: old stage

4. Stack:  sea waves

5. Stalactite: groundwater

- Drumlins: glaciers
- Alluvial fan: river (youthful to mature stage)
- Barriers/Bar/Spit: sea waves
- Seif/Barchan : wind
- Only river that meanders in youthful stage: Jhelum