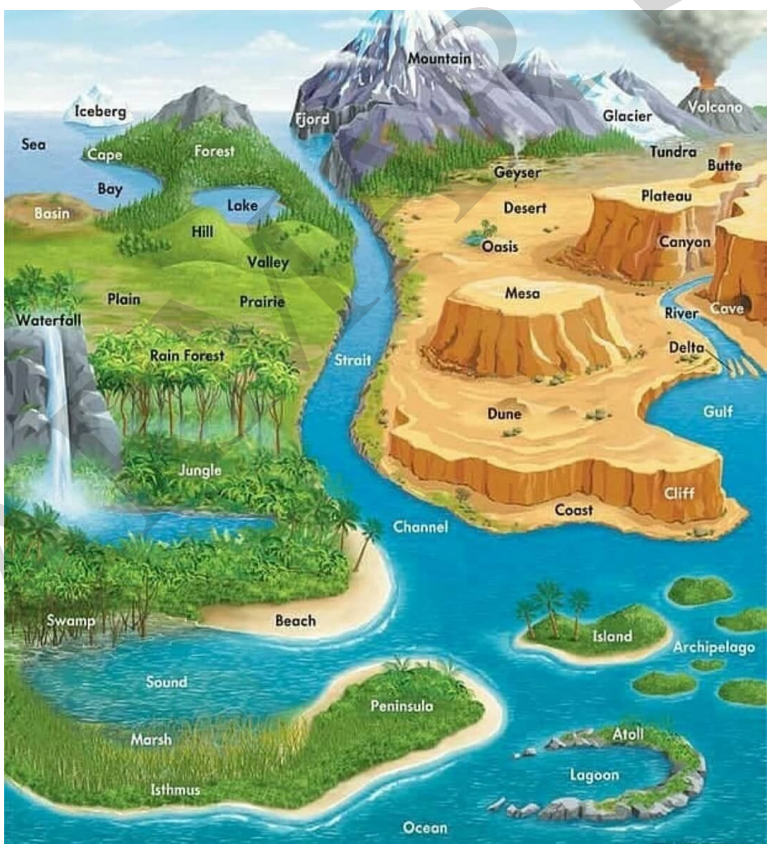
# GEOMORPHOLOGY AND LANDFORMS



## Geomorphology

- Geomorphic process: Changes in the configuration of Earth

Land build/elevate → Endogenic forces

Erosion → Exogenic forces

- 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
  Primordial heat

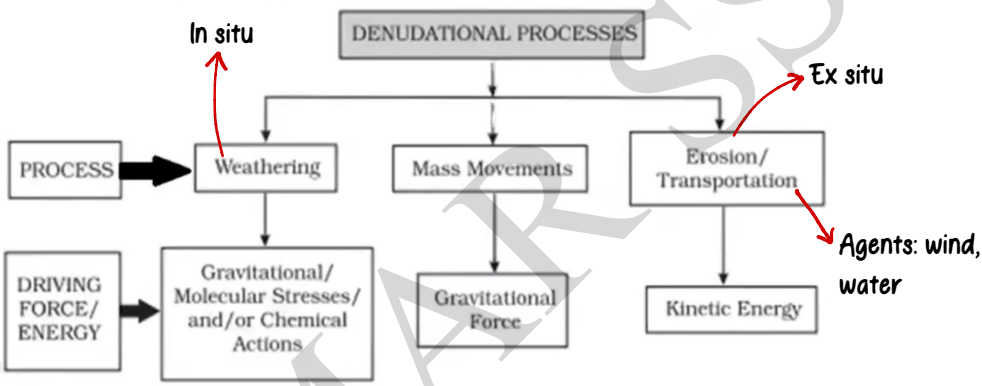
  Changes categorised into:
  1. Diastrophism: it is kind of process that move/elevate/build up the process of Earth

  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
- Ultimately 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

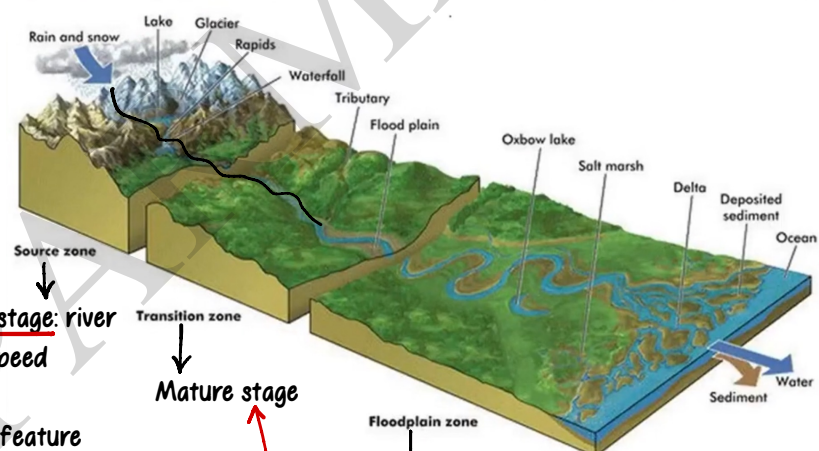
- Creep: slow downslope movement of particles
- Solifluction: slow progressive movement of mass down a slope

- Landforms

Types:

1. Erosional
2. Depositional

- Landforms Created by River




Youthful stage: river flows in speed

Erosional feature dominates

Mature stage

Old stage

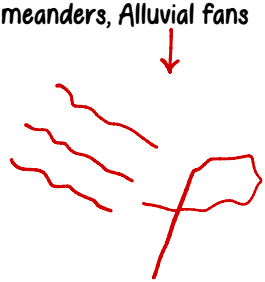
Depositional feature dominates

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

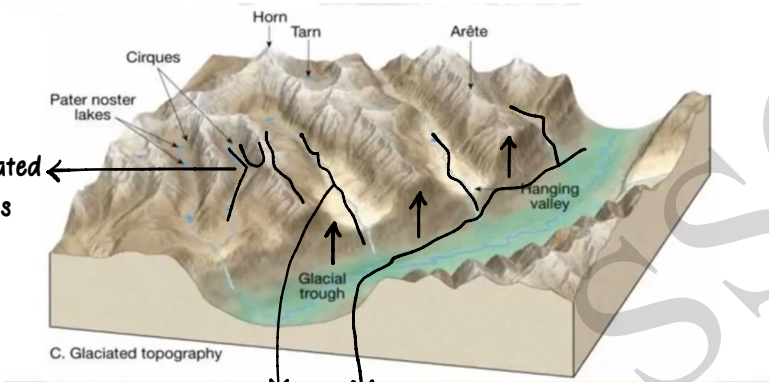

Erosional features:
- V-shaped valley, Gorges, Canyon, Waterfalls, Pothole, Plunge pools, River terraces

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



## Landforms Created by Glacier




**Erosional**

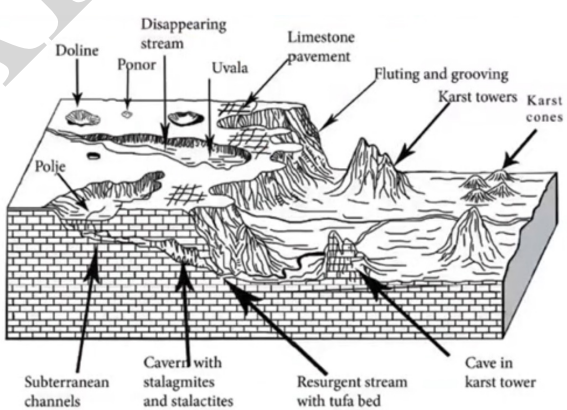
- Cirque: are created in heads of glacial valleys
- Ridges/Arête
- Horn
- Hanging Valley
- Glacial Valley

**Depositional**

- Moraine
- Eskers
- Drumlins
- Outwash plains

- **Landforms Created by Groundwater**: usually seen in places where rock is soft → Dolomite/Limestone → Chemical weathering

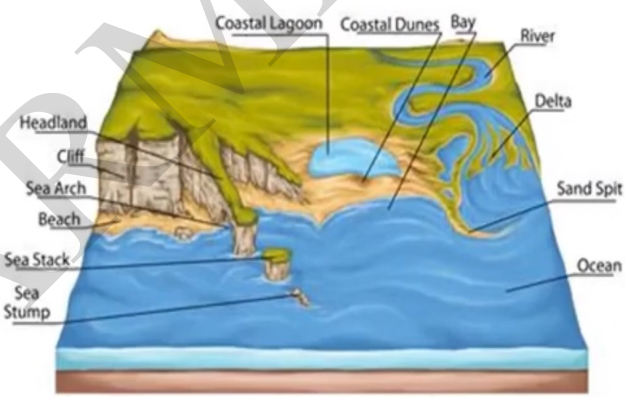
Dolines → Uvulas




Karst Topography (in groundwater) → Found in Karst region in Mediterranean Sea where rocks are made of Limestone and Dolomite → In India, mainly in South India

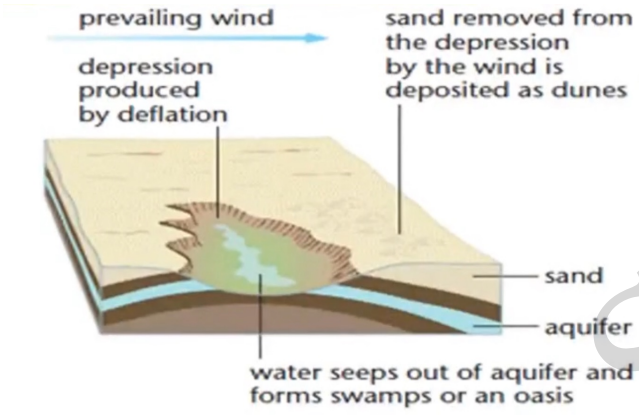
- Erosional: pools, sink holes, dolines, lapies, uvalas, limestones
- Depositional: Stalactite, Pillars, Stalagmite

- Landforms Created by Sea Waves



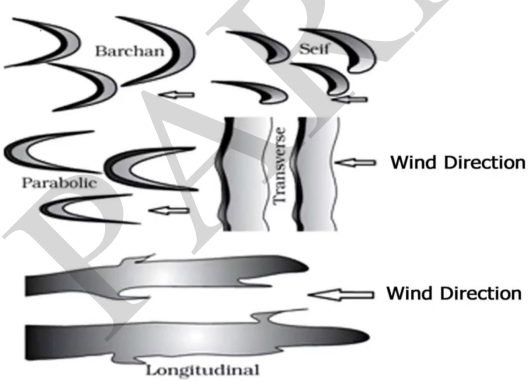

- Erosional: cliff, caves, stack, arch
- Depositional: beaches, dunes, bars, barrier, spits

- 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