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# Competitive Exams: Marine Landforms geography notes on erosional and depositional landforms of marine features

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Watch video lecture on YouTube: Coastal Landforms (By Waves & Currents) Coastal Landforms (By Waves & Currents)

Find this video at: <https://www.youtube.com/video/nd72XVWGaYE?rel=0>

- Confined only to the narrow coastal zone.
- Produced by joint action of waves, currents and tides. The effect of waves is predominating.
- As the waves approach the shore the wavelength continues to decrease while the wave height increases to such an extent that the crest of the wave, topples over and the wave is transformed into a 'breaker' which then collapses. -Breakers may be Spilling, Plunging or Surging breakers.
- They return towards the sea as Backwash or Undertow or Rip Currents.
- The turbulent water known as 'Swash' or 'Surf' or 'Uprush', rushes shore ward with great velocity and force. The distance from the shore where the wave breaks is known as 'Plunge Line' -Wave refraction results in the formation of littoral or long shore currents which move parallel to the sea coast. Coast- Land surfaces modeled conspicuously by waves, now as well as in the past. Shore- Narrow strip of land between the low tide water mark and the high tide mark. Shoreline- Line of contact between land and water Beach- Deposit made by seas that rest on the shore. Processes and Mechanism of Erosion

## Wave Quarrying

Pressure of waves and oscillatory motion of water removes the material. Abrasion, Hydraulic Action, Solution and various weathering processes also activate erosion.

Rate of wave erosion is determined by-

1. Degree of exposure of the coastal region
2. Tidal range
3. Composition of Coastal bed rock.

## Erosional Landforms

- Notch-A recess, indicating the point of wave attack on the coastline.
- Cliff - Almost vertical steep precipitous slope above the sea water on a rocky coast. Wave cut Platform- A platform at the base and front of cliff formed due to retreat of cliff.
- Marine Terraces- Elevated wave-cut platforms marking former high sea levels Coves or Bays- Where hard and soft rocks lay alternately, differential erosion will create lesser indentations on the coast. These are coves or bays. Bight- Feature much larger but similar to that of a cove or a bay.
- Hanging Valley-Rapid retreat of cliff renders small streams incapable to keep down cutting thereby resulting in hanging valleys.
- Sea Caves- Wave action on a headland protruding into the sea leads to cave formation. Arch- Two caves, developing on opposite sides coalesce to form an arch.
- Stack- Eventually, the arch collapses and an isolated pinnacle called stack is formed. Blow hole- A hole formed on a cave roof because of wetness in rock
- Geo- When the whole cave roof collapses, an inlet is formed known as Geo Tidal Pools- Deep depressions on the wave cut platform due to quarrying.
- Rock Reefs- The hard resistant parts of a platform which have withstood erosion.

## Transportation Work

Backwash currents transport the eroded materials seaward which are brought back to the coast by the Surf currents. Thus transportation goes both ways.

Long shore currents are generated due to oblique incidence of waves striking the coast. These currents transport materials parallel to the shoreline.

## Depositional Landforms

Deposition occurs because of: -Decrease in transporting power of wave

Interruption of the long shore drift

River entering the sea -Mutual neutralisation of tidal currents

Shelter provided by the embankments in the coast. Wave Built Platform- Formed by sediments derived from the erosion of cliff and wave cut platforms.

## Major Landforms

- Beaches- A land on shore between the high water mark and the low water mark. Composed of cobbles, pebbles, boulders, fine silt, clay and sand. With reference to the type of material involved beaches can be shell, coral, rock, lava or Shingle beach.
- Shingle Beach-It is composed of flat, circular, smooth stones. Beach Ridges or Berrns- Linear accumulation of shingles on a beach, parallel to the high water mark.

- Beach Cusps- Crescent shaped mass of beach material, ranging from sand to quite large shingles or cobbles. Ridges and
- Runnels-Rises and depressions lying parallel to the shoreline Bars- The ridges, embankments of sands form by sedimentation through sea waves parallel to the shore line are called bars
- Off-Shore or Long Shore Bars- If the bars are formed in such a way that they are parallel to the coast but are not attached to the land, they are called off-shore or long shore bars.
- Spits- Sand bars having one end attached to the land and the other projecting into the sea, are called spits. Hook- A curved Spit.
- Connecting Bars- A bar joining two headlands or two islands
- Tombolo- A connecting bar which connects a headland or mainland with an Island. Lagoons- They are formed when the curves or bays are completely enclosed by bars, (e.g. Chilka and Pulicat) Mudflats- A specialised vegetation adapted to salt and brackish water (Halophytes) invade the lagoon region and help to bind the sediments. The whole lagoon area is finally turned into marsh or tidal mudflats. Analogous to salt marshes tidal mudflats in mid-latitudes are the mangrove swamps of the tropics.