

# COASTAL PROCESSES & LANDFORMS

## \* Coastal Components:

**Coast:** The broad area or strip of land & water where various processes create characteristics coastal landscapes

**Shore:** a narrower belt or subsection of the coast

**Shoreline:** The actual contact border between land & water

**Littoral zone:** from the highest water line to a point where the water is about 200 ft deep

**Beach:** Coastal zone of sediment shaped by wave action

## \*\*\* Agents:

**Waves:** Undulations of water produced by wind energy being transferred to the water

\* Wave sized determined by *wind velocity, direction, duration, & fetch* (distance over which the wind blows)

\* wave components:

height: **vertical distance** between the crest & the trough

length: **horizontal distance** from one crest to the next

period: **time interval** between 2 successive crests passing a fixed point

**Swells:** series of open ocean waves

**Wave of translation:** When the *swell* begins to be affected by the ocean bottom

**Breaker:** a wave whose height exceeds vertical stability & falls forward or “breaks over”

**Surf:** a series of breaking waves

**Swash:** The thin sheet of water that **slides up the beach** after a wave breaks

**Backwash:** The water from the swash that **flows back toward the ocean**

**Wave Refraction:** *wave bending*; caused by the irregular shape of the shore compared to the incoming wave or by areas of shallow water offshore

**Currents:** a body of water or air moving in a definite direction, esp. through a surrounding body of water or air in which there is less movement

**Longshore currents:** consists of the transportation of sediments (clay, silt, sand and shingle) along a coast at an angle to the shoreline, which is dependent on prevailing wind direction, swash and backwash.

\* creates *longshore drift* or *beach drift*

**Rip current:** narrow stream-like flows which move **perpendicular to the shore** and thus **move water and sand away from the shore**

\* may extend 200 to 2500 ft out from shore, & travel at speeds up to 2 knots

**Tides:** the alternate rising and falling of the sea, usually twice in each lunar day at a particular place, due to the attraction of the moon and sun

\* the cyclical rise & fall of water level on the shore due to 3 forces:  
1) Earth's rotation 2) gravitational pull of the moon &  
3) gravitational pull of the sun

**Tidal range:** vertical difference between high tide & low tide;

\* world-wide avg: 2-4 m (6 - 12 ft);

\* one extreme is the Bay of Fundy, Nova Scotia, about 15 m (50 ft)

## **\*\* Degradational Landforms**

### **\* Processes:**

*Hydraulic action:* work of moving water against the shore

*Corrasion:* use of rock fragments in a wave to help erode the shore;  
similar to abrasion in a stream or glacier

*Corrosion:* chemical breakdown

*Attrition:* refers to erosion of rock particles through friction as they are moved from one place to another. The rock particles gradually become smaller and more rounded in shape as they are transported by wind and water

### **\* Landforms:**

*Sea cliffs:* the result of erosion by waves on a headland

*Sea cave:* also known as a littoral cave, is a type of cave formed primarily by the wave action of the sea. The primary process involved is erosion

*Wave-cut platform:* the slightly sloped foot at base of sea cliff

*Sea arches:* natural arch or bridge created where the cliffs meet the sea

*Sea stacks:* a geological landform consisting of a steep and often vertical column or columns of rock in the sea near a coast, isolated by erosion

## **\*\* Aggradational (depositional) Landforms**

*Beach:* beach profile or sections; primarily for sandy beaches

*offshore:* **the area that is always submerged**, even at low tide, out to a depth of about 200 ft; may contain *longshore bars*